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GUEST EDITORIAL

New Challenges in Dental and Oral Health Care

We are now living in a planet with rapidly changing demographics and explosive technology. Now the average denizen lives up to a ripe old age with many breaking even the century barrier. The Internet and the media revolution are baffling us every day, and new treatment methods in dentistry including implants are becoming widely popular. What is more, personalized medicine is bound to transform modern medicine and dentistry. In this anniversary issue of SLDJ, I wish to pen a periscopic view of the foregoing key issues.

Older adults are living longer and retaining their teeth, resulting in a concomitant increase in the need for oral care services worldwide. It is clear that profound disparities exist between race/ethnicity, socioeconomic and dental status. Old age itself brings another set of concerns and challenges, such as limitations in daily routine activities, and financial constraints which in turn make access to, and utilization of, dental services difficult among older adults. Although implants improve the quality of life, in contrast to denture wear, the vast majority of older adults do not have access to these due to financial constraints. Dr Branemark who pioneered dental implants once said that his vision was to see "no one steeping his dentures at night in a water tumbler". I really wonder whether his vision would be realized in an imperfect world we are living in.

So how can internet affect the future of dentistry? First, internet and the associated media are increasingly used as a means of lifelong learning tool for healthcare practitioners and there is a simultaneous escalation of the numbers of patients who rely on the internet for the search and acquisition of healthcare-related information and services. The latter is indeed

a new challenge for the practicing dentist who will be faced with up-to-the-minute information on various oral diseases that even he/she may be unaware of or on the contrary misconceptions that litter the internet. There is, hence, a great need for the whole oral healthcare team to understand the potential advantages as well as pit falls of Internet-based information. Internet, therefore, is a double edged tool that must be used with care.

Internet and the associated e-technology bring in its wake the real possibility of personalized medicine. Wikipedia defines personalized medicine as "a medical model that proposes the customization of healthcare, with all decisions and practices being tailored to the individual patient by use of genetic or other information". Are we, in dentistry, paying heed to this new notion that is revolutionizing medicine? Indeed, there is much anticipation and hope that customized approaches to prevention and treatment based on a person's genetic make-up will result in better health outcomes. That is, the current, traditional concept of "one size fits all" might no longer be valid in a few years. There is much evidence in the literature that a person's health and behavior will be modified by his or her unique genetic composition and the epigenetic factors. (A term that means heritable traits, including the phenotype, that do not involve changes to the underlying DNA sequence). Furthermore, there is evidence that psycho-social factors that are unique to the individual play a role in the etiology, pathogenesis, and disease progression.

So, this is a mere glimpse of the brave new world our profession may face. As always every day there are challenges and opportunities and the wise has to discover how to navigate this exciting path full of promise, avoiding the pitfalls.

Finally, on the auspicious occasion of the 80th anniversary of the Sri Lanka Dental Association, it gives me great pleasure to wish the society and its journal many a year of yeoman service to the community. Many Happy returns!

Lakshman Samaranayake
Hon DSc (Peradeniya), BDS, Hon FDSRCS (Edin), DDS(Glas), FRCPath (UK), FHKAM(Path), FHKAM(DSurg)
Dean of Dentistry | Chair of Oral Microbiology | Tam Wah-Ching Endowed Professor in Dental Science | The University of Hong Kong
King James IV Professor | The Royal College of Surgeons of Edinburgh, UK
Director |The Prince Philip Dental Hospital, Hong Kong
Head of School-Designate | School of Oral Health, University of Queensland, Brisbane, Australia

King James IV professorship of Royal College of Surgeons of Edinburgh, conferred on Professor Lakshman Samaranayake

The Seal of Cause or Charter of Privileges granted to the Barber Surgeons by the Town Council of Edinburgh on 1 July 1505, allowed them to practice surgery within the city was confirmed under the Privy Seal on 13 October 1506 by King James IV of Scotland who had an interest in all matters scientific, including medicine and surgery, and was particularly proud of his skill as a dental surgeon. To mark the Millenium, the Royal College of Surgeons of Edinburgh, with the Faculty of Dental Surgery, established lectureships to be awarded annually by the College in open competition to practitioners of Surgery or Dental Surgery who have made a significant contribution to the clinical and/or scientific basis of surgery over an extended period of their consultant career and have acquired a National or International reputation, and that they be called King James IV Professorships. In 2013, the oration was delivered by Professor Lakshman Samaranayake the current Dean and Chair of Oral Microbiology at the Faculty of Dentistry and Tam Wah-Ching Professor of Dental Sciences at the University of Hong Kong. Hailing from Sri Lanka, Professor Samaranayake has held teaching and consultant positions at the University of Glasgow, UK, University of Alberta, Canada and the University of Peradeniya, Sri Lanka. The author of some 400 research articles and with an h-index of 55, Professor Samaranayake has been cited in the international literature, over 11,000 times. His major research focus is oral candidiasis (candidosis), and over the last thirty years, he has published more than 250 research articles on the latter subject and he is cited as the world`s foremost expert on oral candidiasis according to the website Biomedexperts.com.

The Royal College of Surgeons of Edinburgh honoured him with the King James IV Professorship for his outstanding contributions to surgical sciences, and sponsored his Oration, at the International Academy of Oral Oncology (IAOO) congress in Greece, 2013, presented by the President of IAOO, Professor Crispian Scully CBE. Professor Samaranayake is the first from Asia to receive this coveted award

The figure shows Professor Crispian Scully CBE, President of IAOO and member of RCSEd Dental Council, presenting the award to Professor Samaranayake.

Courtesy of Professor Crispian Scully CBE

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History of Sri Lanka Dental Association-The First 80 Years Celebrating the past and looking into the future

Hilary Cooray

Introduction

It was Winston Churchill, who whilst addressing the Royal College of Physicians in 1948, said that "The further you look back, the farther you will see forward." Likewise, the Sri Lanka Dental Association has completed 80 years since its foundation, and an anniversary such as this, is an opportunity for celebrating the past and looking into the future.

Dental Surgery as a profession under the present western system of Medicine was established in Ceylon on 15th May 1915, when the first qualified Dentist Sperling Christolfesz was registered in the Dentist Register, maintained by the Ceylon Medical Council under the Dentist Registration Ordinance. Christolfesz was qualified in Medicine as well as in Dentistry [L.R.C.P.& S (Edin), L.F.P. & S (Glas), and L.D.S. (Edin)].

The Dental chair in 1900's

Prior to this, Dentistry was practiced in the Ayurvedic System among the Ceylonese. The British Doctors who moved with the British troops in 1815 were practising dentistry under the Western System amongst the British population who came here to Ceylon in search of greener pastures for trading as well as professional services like Medicine, Accounting, Legal, Civil Services and Agriculture. The practice of Dentistry by the British Doctors was restricted mainly to the extraction of teeth.

Dentistry in the Ayurvedic System of Medicine

Formation of the Ceylon Dental Association

By 1932, there were nearly 25 registered Dentists practicing in Ceylon at government hospitals and in the private sector.

An association is born when there is a need for it by that particular group and the public who are

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served by this group, and it is the availability of good leadership that will decide whether this association will survive.

On 6th December 1932, a group of 12 dentists, working in the private and public sectors met at the Dental Institute and formed the 'Ceylon Dental Association.' It was decided that this association be conducted as nearly as possible on the lines of the British Dental Association (B.D.A).

It was thought expedient therefore to adopt the B.D.A.'S Rules and Regulations temporarily until the Ceylon Dental Association (C.D.A.) was able to modify and adapt them to local conditions. Consequently it will be seen in the Rules and Regulations therein published that the Memorandum, Articles, by laws etc. of the B.D.A. are taken over almost entirely, except where suitable modifications had to be made to meet local requirements.

Founder Members of the Ceylon Dental Association
6th December 1932

Dr. E. Abeyesundara, Dr. V. Sinnetamby, Dr. C.A.R. Goonewardene, Dr. A.E. Daviot, Dr. M. Brito-Mutunayagam, Dr. W. Balendra, Dr. J.S.R. Goonewardene, Dr. A.A. Gomes, Dr. S.W. Garne, Dr. H.E. Swan, Dr. H.S. Christoffeisz, Dr. S.L. Cramer

The names of the founding members are given below:

NAMES	DESCRIPTIONS
Sydney William Garne (President)	L.D.S. (Eng)
Henry Eric Swan (Vice President)	L.R.C.P.& S (Edin), L.S.P. & S (Glas), L.D.S. (Edin)
Arthur Annesley Gomes (Honorary Secretary)	F.R.C.S.I, D.P.H., L.M.S. (Cey), L.D.S. (Edin)
M. Brito Muthunayagam (Treasurer)	M.R.C.S. (Eng), L.R.C.P (Lond), D.P.H., D.T.M., L.D.S. (Eng)
Joseph Stephen Rodrigo Goonewardena	L.R.C.S (Edin), L.M.S. (Cey), L.D.S. (Edin)
Herman Sperling Christoffelsz	L.R.C.P.& S (Edin), L.F.P. & S (Glas), L.D.S. (Edin)
Stanley Leonard Cramer	L.R.C.P.& S (Edin), L.M.S. (Cey), L.D.S. (Edin)
Wytillingam Balendra	M.R.C.S. (Eng), L.R.C.P. (Lond), L.M.S. (Cey), L.D.S. (Eng)
Veerasekaran Sinnathamby	L.R.C.P.(Edin), L.F.P. & S. (Glas), L.D.S. (Edin)
Charles Arnold Rodrigo Goonewardena	L.D.S. (Eng)
Earnest Patric Noel Abeysundera	L.R.C.P.(Edin), L.F.P. & S. (Glas), L.D.S. (Edin)
Arthur Elomore Daviot	L.R.C.P.(Edin), L.F.P. & S. (Glas), L.D.S. (Edin)

All twelve founder members of the C.D.A. had British qualifications. The constitution provided a strong foundation on which this association grew steadily.

The C.D.A. brought about far reaching changes to the profession in many areas. On the resolution made by the association in 1933, the Dental Registration Ordinance was amended to ensure the title "Dental Surgeon" could be used only by those having a qualification from a University. In 1938, the association again made representations together with the Ceylon Branch of the British Medical Association (B.M.A.) to the government, when the dentists from some European countries started to register and work in Sri Lanka.

The Dental Ordinance was amended, by amendment No:55 of 1938 which prevented foreigners from practising in the island. Medical colleagues pointed out that those nationals from other countries which did not recognize the qualifications from Ceylon, should not be registered to practice here. This proposal was established and no more "aliens" were registered. The Amendment states: "No alien shall be registered except with the approval of the Governor on the recommendation of the Executive Committee of Health." In this section, "alien" has the same meaning as in the Aliens Registration Ordinance No. 30 of 1935.

The CDA and the 1938 Dental School

By 1925, the government had started its first dental clinic in Colombo followed by clinics in Galle, Kandy, Jaffna, Batticaloa and Kurunegala. The Colombo dental clinic was staffed by one dental surgeon and 3 apothecaries who had been given an in-service training. They were performing extractions under the supervision of Dr. Balendra who was the Medical officer incharge of the Dental Institute.

The need for more dental surgeons was a matter of urgency. Dr. Annesly Gomes, the Secretary, following pressure from the members of the Ceylon Dental Association, made a strong and urgent request to the government to commence a dental school to train dental surgeons.

The school was established under the administration of the Ceylon Medical College which conducted a post graduate course leading to a licentiate in Dental Surgery for six medical graduates for the time being. The prospectus also stated the full dental curriculum, for dental students who are not medically qualified, would be established subsequently (Prospectus of Ceylon Dental Hospital and school 1938).

However, once the six medical graduates qualified and obtained their L.D.S. (Cey) qualification, the Dental School was closed. No reasons given for this closure. The Ceylon Dental Association took up the matter and passed a resolution in 1942 to appeal against the closure to the British Governor, Sir Andrew Caldecott. The C.D.A. later passed a vote of thanks to Mr. G.A. Willie, a member of the State Council, for speaking on the behalf of the C.D.A. during the State Council debate on this subject. Six years had to pass until a new school had opened.

Attempts to allow the title 'Dental Surgeon' to be used by Registered Dental Practitioners, who aren't academically qualified.

Some of the registered dentists under the section 26 of 1927 were quite influential and had political connections with the Ministers.

The Ceylon Dental Association was informed to move or amend the Dental Ordinance so as not to enable these academically unqualified Dentists to assume the title of "Dental Surgeon."

The C.D.A. sent a deputation to the Ceylon Medical Council and then to the Governor Sir Edward Reginald Stubbs. It explained that this sort of interference with the profession would not receive the approval of the British Dental Association nor the British Medical Associa-

tion. The Governor was requested to discourage the Minister of Health, the Hon Mr. W.A. De Silva, from pursuing this amendment. The proposal was not pursued.

Dental Representation in the Ceylon Medical Council

In 1940; Dr. S.L. Cramer explained to the membership the importance of having a dental representative on the Ceylon Medical Council which has the controlling body for dental education; maintenance of the Dentists Register; and the disciplinary control body. A resolution was passed by the C.D.A. requesting that a representative of the elected dentists be made a member of the council. This resolution was then sent to the registrar of the council and was accepted.

Attempts by the Association to Stop the Illegal Practice of Dentistry (1940)

A deputation of the association had a meeting with the Inspector General of Police to discuss the implementation of the Dental Section of the Medical Ordinance. The Inspector General informed the deputation that the law, as it was, did not give the Police much opportunity to prosecute the quacks, since nobody could prevent a person calling himself a dental mechanic, taking impressions of the mouth or performing extractions.

A judgment given by the Supreme Court (J.Akbar) had held that the taking of impressions does not constitute the practice of dentistry. He advised the association to attempt to get the law amended. The association also adapted the following motion: "This body disapproves of its members training apprentices with a view to registering such apprentices as dentists in the Dentists register of Ceylon and therefore agrees not to accept Dental apprentices for this purpose."

Proposal for the Dental School to be run at the Ayurvedic Hospital School (22nd Nov 1942)

There was mounting pressure from the Department of Health for the Ceylon Medical College to restart the Dental School. However the organization plus the depleting finances and the prevailing war made it difficult for them, which resulted in the delay. An emergency meeting of the Ceylon Dental Association was called to discuss the proposal from the Department of Health.

According to the proposal, the Ministry would conduct a training scheme for Dental students at the Ayurvedic Hospital School. Their departments of Anatomy and Physiology were to be used for teaching during the first year, and the Dental Institute was to be used for subsequent clinical training. However, the proposal further stated that the students for the course were to be admitted on an examination of a standard lower than that required by the Ceylon Medical College and the General Medical Council of Great Britain. The association unanimously approved this scheme and proposed that the University training program to be commenced as early as possible.

The University's requirement of equipment was discussed and the President was authorized to follow up these matters. The dental school was started in 1943 under the administration of the Faculty of Medicine, University of Ceylon in Colombo.

Honorary Membership of BDA

Honorary membership of the British Dental Association was conferred on Dr. W. Balendra during the 1945 Empire Dental meeting of the B.D.A. held in London. He was the Ceylon Dental Association's Honorary Secretary.

The Placement of Chinese and Other Dental Mechanics in a Separate Register (1949)

Sri Lanka's ethnic Chinese community traces its origin to about 100 migrants from mainland China's Shandong and Huber provinces, who had arrived on the island in the 1930's and 1940's. They did well as dental mechanics in the manufacture of dentures.

The Minister of Health was under pressure from the Chinese Ambassador to legalize the practice of dentistry by Chinese people who had been practicing as denturists in Sri Lanka. The Minister proposed that the admission of Chinese and other mechanics to the Dental Register be allowed provided that they pass an examination. It would be set by a Board consisting of a member of the University Dental School, Medical Officer-in-charge of the Dental Institute and a Visiting Surgeon from the General Hospital.

The Ceylon Dental Association sent a strong memorandum protesting against this proposal. It stated that as a Dental School had been established to train qualified dental surgeons, allowing another category of dentists would undermine the training program and also lower the standard and the status of the profession in the country.

There are now an estimated 100 dental mechanics of Chinese origin living in Sri Lanka including 10 in Colombo alone. They practice as denturists (i.e. make dentures for the public) in shops along Olcott Mawatha Main Street and 2nd Cross Street. Others are found in Borella, Maradana, Negombo, Badulla, Matugama and Jaela.

Establishment of the Government Dental Clinic

Dental services in the government hospitals commenced in 1925 with the establishment of the first Dental clinic in Colombo. Dr. W.Balendra (L.M.S.) –who had returned to Sri Lanka after obtaining the LDS from England– was largely responsible for initiating and having this clinic organized and established. This was the beginning of the employment of Dental Surgeons in the public sector, which today has a cadre of approximately 1400 dentists.

All Dental Surgeons appointed to the government service in the early stages, were those with medical qualifications as well. The terms of employment of these persons were not a problem as they were employed first as Medical Officers since their L.D.S. qualification was considered as a specialist qualification. They were placed on the specialist salary scale and hence, there was no dissatisfaction in terms of service and salaries paid to these medically qualified dental officers.

The first batch of dental graduates qualified from the new Dental School in October 1947. They were appointed as temporary acting dental surgeons on a daily paid rate of Rupees Eleven and twenty-five cents. Later, they were appointed on a permanent basis as Grade II Dental Officers.

The government arbitrarily decided on a salary scale for the dental officers which brought about discontentment from the start. In the absence of a separate association to look after the interests of the government employed Dental Surgeons, the Ceylon Dental Association first made representations to the Ministry of Health in May 1947. It sought a similar salary scale for Dental and Medical Officers.

On 1st October 1949, the C.D.A. submitted a memorandum regarding salaries of Dental Surgeons as there was much discontentment in the Dental Service because of the disparity in salaries paid to them and the Medical Service.

Training of Dentists

Since there were no training programs for dentists till 1933, Dr W Balendra trained three Apothecaries to do extractions and scaling. The Colombo clinic continued for nearly 15 years with their assistance. They were registered as dentists by the Ceylon Medical Council.

The Ceylon Dental Hospital and School commenced in 1933 which started a dental training course under the auspices of the Ceylon Medical College. This course commenced with 6 medical graduates who were to follow a further two years training with a view to grant a license to

practice Dental Surgery. Some of them joined the government service and were appointed to dental clinics established in Jaffna, Batticaloa,and Kurunegala.

Formation of Government Dental Surgeons Association (GDSA)

By 1951 there were approximately 30 Dental Officers who had graduated from local Dental School and others from U.K. employed by the Department of Health. They were faced with many problems including anomalies in salaries; disparities in service; issue of medical certificates; railway warrants and many others.

On the 4th of October 1951 a meeting was called at the Dental Institute for the formation of a trade union. At this meeting, Mr. Dickson Silva was elected as the first President and Mr. V. Cumaraswamy as the secretary. Since then up to now, the trade union has been continuously demanding improvements to conditions of employment by negotiation and at times by trade union action, to bring the services to the present day levels.

The Sri Lanka Dental Association was formed in 1932 which provides leadership in professional matters. Until the GDSA was formed, all negotiations with the government on all matters of Dental Surgeons employed in the Department of Health were done by them.

Establishment of the Dental Nurses Training School

The Dental Nurses Training School was established in 1951, with the assistance of the government of New Zealand in order to train Dental Nurses who were to treat the Children's needs in dental care. The Medical Ordinance was amended to enable Dental Nurses (later designated as therapists) to attend on children who were under the age of twelve years. This clause reads as follows: "The performance by a qualified Dental nurse in the employment of the government of Ceylon of minor dental work in any public dental service should be done under the supervision of a Dental or Medical Practitioner."

414 school dental clinics are managed by 407 dental therapists who perform a yeoman service to the children of this country by treating approximately 503305 of them every year.

Membership of International Dental Association

In 1951, a decision was made for the CDA to join the FDI, but it did not materialize due to financial constraints faced by the association at that time. The Ceylon Dental Association joined the Federation Dentaire Internationale in 1965. After a few years, the membership lapsed due to non-payment of dues, but was restarted again in 1986. Since then, the Association has been a regular member of the federation, attending the congresses of the F.D.I. and participating in various sub committees and the sections of the organization.

The Sri Lankan Dental Association (S.L.D.A.) joined the Regional Organization of the F.D.I.; the Asia Pacific Dental Federation in 1987; and held the Asia Pacific Dental Congress in Colombo in 1997 and in 2006. This brought Sri Lanka to the International scene amongst other well established dental professional organization in the region.

When the Commonwealth Dental Association was founded in 1992, Sri Lankan Dental Association became a founder member. The 6th Triennial meeting of the Commonwealth Dental Association was hosted by the S.L.D.A. in 2006.

Expansion of Dental services in the clinics maintained by the Ministry of Health

Starting with the training of five Dental Surgeons a year in 1944, the Faculty of Dental Science now has programs to train 75 Dental Surgeons a year. They are being mobilized to every part of the country in General Hospitals, Base Hospitals, District Hospitals, School Dental

Clinics and outreach programs conducted by the Ministry.

The overall management of the Dental Health Services of the Country comes under the purview of the Deputy Director General (Dental Services) who is assisted by Regional Dental Surgeons, Consultants, Dental Surgeons, and the Dental Therapists of the department. They cater to the Oral health care needs of nearly two million patients a year.

The present workforce consists of 1400 Dental Surgeons of the Department and 55 specialists in the fields of Oral and Maxillo Facial Surgery, Orthodontics, Restorative Dentistry, and Community Dentistry, In addition there are Dental Surgeons who are specialized in Medical Administration to serve in senior Administrative positions as high as Additional Secretary (Public Health) in the Ministry of Health.

Distinguished Visitors to the Ceylon Dental Association

Since the commencement of the holding of the primary F.D.S.R.C.S. examination in Colombo by the Royal College of Surgeons of England in 1959, many renowned examiners were invited to address members of the Association. The celebrities who were invited to lecture were:

- In 1959, Prof. Robert V. Bradlaw (later Sir) addressed the membership on "Oral manifestations of systemic diseases."
- Professor Waerhaug, Professor of Periodontology from the University of Oslo –who was on a W.H.O. assignment–, was invited to speak on 'Prevention and Treatment of Periodonal disease.'
- Professor Martin Rushton C.B.E. Dean of the Faculty of Dental Surgery, Royal College of Surgeons of England (1962);
- Prof. I.R.H. Kramer from Eastman Dental Hospital who spoke on 'Oral Ulceration';
- Profession Benjamin Fickling, Dean of the Faculty of Dental Surgery (1967);
- Professor Ralph Cocker from Kings College Hospital School (1971) and;
- Professor Alexander Macgregor from Birmingham Dental School (1973) had also addressed the Association during visits to Sri Lanka.

Dame Margaret Seward, Bryan Gillard and all Presidents of the British Dental Association have been our guests. These influences and contacts with the British Dental Profession have helped the Sri Lankan Dental profession to keep abreast of international developments and standards.

Title of Doctor

Following the British tradition, Dental Surgeons were designated as "Mr." However in 1975, the Ceylon Dental Association, after much deliberation, requested the Ceylon Medical Council to allow Dental Surgeons to use the courtesy title of "Doctor." The Medical Ordinance was amended as follows: A dentist shall be entitled to assume or use the title "Doctor" provided that every dentist who use this title, should use the words "Dental Surgeon" after his name.

Period of Rapid Development

With the dedication, efforts, and the hard work of the members of the S.L.D.A., it had managed to purchase its own office in 1982 at the Organization of the Professional Associations Building. This has enabled the S.L.D.A. to have a fully fledged functional office with permanent staff.

Many activities were originated. Amongst them were the Annual Scientific Sessions; the S.D.L.A. Orations and regular continuing Professional Development Programs. The branches of the association were established in Kandy, Galle, North Western, North Central and North Province. Regular out-reach programs were carried out at various parts of the country. A research fund was also established and the funds were dispersed to the research projects of the members. "Treatment of Fluorosis" Project was

established in conjunction with the Japanese Dental Association. "Live, Laugh & Learn" Project to impart oral health education to the children and trainers were being done with the FDI / Unilever collaboration.

Looking into the future will be very important for an active association like the S.L.D.A. to know its future. It has its own vision & mission statements:

VISION To be the recognized leader in promoting excellent oral health care.

MISSION Committed to maintaining the honour and interest of the dental profession whilst keeping the excellence in oral health care nationally by public education and interaction with other health care stake-holders.

One of the important tasks in the present day scenario is to develop a good leadership amongst the profession. The association also needs to initiate action in community service by educating the public, providing access to dental care and ensuring an equitable distribution of oral health care facilities. The association also has the responsibility of promoting as well as maintaining professional ethics and a good set of values for its membership.

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Historical Review II

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Evolution of Oral and Maxillofacial Surgery in Sri Lanka

N.A. de S. Amaratunga

Historically medicine and surgery had been practiced in Sri Lanka from very early times beginning in the Anuradapura Period when Sri Lankan civilization was in its infancy. Health and sanitary facilities in the Anuradapura city had been so good as to receive plaudits from visiting foreign travelers. Work of Indian surgeons led by Susrutha who is considered to be the father of plastic surgery had probably influenced the development of surgery in Sri Lanka. Several artifacts considered to be remnants of surgical instruments have been found in Anuradapura and Polonnaruwa. In this regard it is of high significance that the first hospital in the world was built in Sri Lanka in the 6th Century which is testimony to the rich heritage of health services in ancient Sri Lanka. Our maxillofacial surgeons must have inherited those genes of their forefathers who were good surgeons including the surgeon King Buddhadasa who carried his surgical instruments wherever he went.

At the beginning major oral surgery such as management of facial injuries, cysts and odontogenic infections were carried out at the Dental Institute in Colombo and the Dental School in Peradeniya. There were few oral surgeons working in those two institutions and none in other major hospitals in the provinces. These oral surgeons had qualified in the UK and got their FDSRCS but some did not have a post graduate degree in dentistry but instead had a medical qualification and they were recognized by the ministry of health as specialists whereas the dentists who had the FDSRCS were not.

Postgraduate education in dentistry received a big boost when the Royal College of Surgeons of England started to conduct the Primary FDSRCS examination in Sri Lanka in the mid nineteen sixties. Given the colonial history of the country and the subsequent links with UK in the educational field it was natural that our government turned to the UK for assistance in medical education. Thus the country's medical education and the health services were modeled on the UK system. They had been holding the Primary FRCS, MRCP and MRCOG for some years before that and must have been impressed by the educational standards reached by our graduates which made them think of widening the scope of the subject area to cover dentistry as well. Several dental surgeons took this examination and those who were successful were awarded scholarships to go to the UK to do the final examination which again was a tremendous enhancement of opportunities for postgraduate dental education. Though the government thus recognized the need for higher training in dentistry those who returned to the country with FDSRCS were not recognized as specialists in the ministry of health. Though they engaged themselves in the practice of major oral surgery and other branches of dentistry they were very frustrated as they were not given due recognition. Their salaries were not at par with those of the medical specialists and facilities extended to them in the hospitals were not satisfactory. Despite these frustrations they did some very good work which were the germinal seeds that sprout-

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ed later as the science and the art of maxillofacial surgery in Sri Lanka. The dental profession decided not to take these indignities lying down and launched a massive trade union action in nineteen sixty six which brought in good results. FDSRCS was recognized as a specialist qualification and the salaries and working conditions were improved in keeping with government regulations. This was a landmark victory and decisive factor in the further development of oral surgery in Sri Lanka.

While these developments were taking place in the ministry of health there was a corresponding improvement in the Dental School, University of Peradeniya with an increase in the intake of students and recruitment of quality staff. The dental school which hitherto had functioned as one department of the medical faculty, which very much hampered its development, ventured into diversification of the areas of study and created five departments. These changes facilitated the development of oral surgery which in the global seen was rapidly advancing as a major branch of dentistry which had its territory enveloping the whole of the face and the supporting skeleton. In Europe which was our model at that time oral surgery had achieved vast improvement, as had surgery in general, during the period between the first and the second world wars. Treatment of trauma and battle ground injuries improved by leaps and bounds and these advances had their impact on surgical procedures such as reconstruction, flap surgery etc. Orthognathic surgery and facial aesthetic surgery developed rapidly thereafter widening the horizons of oral and maxillofacial surgery and making it one of the most important specialties in dentistry and medicine in general which made a enormous contribution to the well being of human beings. Sri Lanka was slow at the beginning in keeping pace with these developments. The country lacked funds for sponsoring post graduate medical education entirely abroad and foreign scholarships were becoming scarce and difficult to obtain. This was a drawback for postgraduate training in all branches of medicine. Yet the country had a fair number of well qualified and experienced medical and dental professionals. The government correctly thought it was time to venture into postgraduate medical education and set up our own institutions for this purpose as we had the necessary expertise. Thus the Postgraduate Institute of Medicine came into being and it has grown from strength to strength. A Board of Study in Dental Surgery, which had representation both from the ministry of health as well as the dental school, was also set up at the very beginning to oversee the postgraduate education in dental surgery. Initially it offered only one training programme and that was the MS in Dental Surgery course which covered all the study areas in dental surgery. Later a separate programme in orthodontics and then in community dentistry were developed making it possible for allocation of more time and weightage to major branches in dentistry such as oral surgery.

While postgraduate dental education was thus progressing far reaching developments were also taking place in the dental school of the University of Peradeniya which had a big impact on the advancement of oral and maxillofacial surgery. Firstly a new department of oral surgery was formed and then the dental school separated off from the Faculty of Medicine as a new Faculty of Dental Science enabling both to escape the shackles and take giant steps forward. The creation of a Faculty made it possible to lobby for Japanese grant aid which was a total success and the final outcome was a state of the art modern dental hospital with massive inputs for the development of oral and maxillofacial surgery. Further the training of oral and maxillofacial surgeons by the Japanese ensured the optimum benefits to the Department of Oral and Maxillofacial Surgery. The modern facilities including operation theatres, wards, central sterilization service department and intensive care unit made it possible to undertake the most advanced types of surgery in the treatment of oral cancer, facial

trauma, orthognathic surgery, cleft lip and palate etc. The Department of Oral and Maxillofacial Surgery was recognized by the International Association of Oral and Maxillofacial Surgeons as a Centre of Excellence for purposes of training. Several surgeons from Japan, Vietnam, Malaysia, and other countries have undergone training at this centre. It has the potential to develop further and rival some of the best maxillofacial units in the world.

In order to keep pace with the rapid developments in this field and while necessary physical facilities were being acquired and the training of personal was taking place in the premier dental education centre much needed curriculum changes were introduced by the Board of Study in Dental Surgery of the Postgraduate Institute of Medicine. The study programme leading to the MS in Dental Surgery was diversified into two streams one in oral surgery and the other in restorative dentistry. This enabled the allocation of more time in the four year programme for oral surgery. Greater weightage was also allotted for the subject in the examinations. Recent advances in the field could be introduced without burdening the trainees too much. General Surgery and Medicine were also given more time as maxillofacial surgery grew in scope involving a larger anatomical area in the head and neck necessitating an adequate knowledge in the medical and surgical management of patients. These changes were well received by the Royal College of Surgeons of UK which recognized our training programmes and extended exemptions to our graduates so that they could take the UK examinations without having to do any appointments in that country.

Further improvements were made in the oral surgery curriculum recently as it was felt that more time is needed for general medicine and surgery and the duration of the course was accordingly increased to five years. These changes have been approved by the PGIM after intense discussions with the surgeons. In the Western countries maxillofacial surgeons need to have medical degrees both a basic as well as postgraduate degree in surgery. This type of training could be very expensive and too long which the third world countries cannot afford. In developing countries maxillofacial surgeons need not have medical qualifications and in Japan too this seems to be the philosophy though they could well afford it. It is generally felt that training programme in maxillofacial surgery in Britain is too long and by the time the surgeon completes the programme he hardly have the time to acquire experience, make contribution to the profession and excel in the field with research publications etc. Moreover whether all that training and degrees are really necessary for the practice of maxillofacial surgery is questionable. Maxillofacial surgery tends to develop links with ENT, Eye and Neuro surgery in order to engage in joint procedures this tendency seems to have influenced education planners in Europe and their policy has been to burden the programme with more and more courses and requirements leading to a heavy toll on the trainee. Two basic degrees and two postgraduate degrees are compulsory requirements to be certified as a maxillofacial surgeon in Britain. It is hoped that this kind of thinking would change and more realistic training programmes are developed in those countries which have the power to influence the rest of the world.

At present oral and maxillofacial surgery in Sri Lanka is well developed and senior people like us who participated in its development at the very beginning could be happy and satisfied that the future is in the hands of well trained and qualified maxillofacial surgeons distributed over all parts of the country giving yeomen service to the people and developing their craft with dedication. Their numbers are on the increase their commitment seems to be of a high order and their moral and ethical obligation are also not in any doubt. As they participate in the SLDA, CDA and FDI joint scientific conference they could look forward to many more achievements.

Research Article I

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Impact of perceived oral problems on daily performance in 15-year-old students attending public schools in Kandy education zone

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Abstract

Objective: to determine the impact of perceived oral problems on daily performance in 15- year-old students attending public schools in the Kandy education zone.

Materials and methods: The sample consisted of 591, 15-year-old students attending public schools in the Kandy education zone. Data were collected by means of a pretested questionnaire.

Results: Nearly 60% of the sample had perceived oral problems at the time of responding to the questionnaire and the most common oral problem perceived was malpositioned teeth (47%). The overall prevalence of impacts on daily performances in those who perceived oral problems was 83%. All students who perceived a toothache had experienced oral impacts. Students who perceived that they had multiple oral problems had significantly experienced more impacts on their daily performances than those who did not perceive that they had multiple oral problems (OR=2.40, 95% CI=1.02-5.65). Presence of malpositioned teeth was perceived as the main cause of impacts on four performances namely speaking, smiling, maintain emotional state and social contact.

Conclusions: Perceived oral problems had caused several impacts on daily performances in this group of students and the pattern of impacts varied according to the type of perceived oral problem.

Key words: impact, oral problems, daily performance, adolescents,

Introduction

The importance of using subjective indicators of oral health in combination with normative measures to describe both oral health status of individuals and outcomes of oral health care is well accepted.[1] Therefore assessing subjective impacts of oral conditions has become an important theme in dental research at present. Several researchers have assessed the psycho-social impacts of oral conditions and the initial studies have been limited to adult populations. However with the development of child specific oral health quality of life instruments in more recent times, attempts have been made to determine the prevalence and severity of impacts caused by oral problems as well the impact of specific oral conditions on oral health related quality of life of adolescents. Findings from studies indicate that the prevalence of oral impacts is high in adolescents while eating and smiling are the most common daily performances affected due to oral conditions.[2-5]

Several studies including three national oral health surveys provide valuable information pertaining to the oral disease patterns in Sri

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Lankan adolescents. However there is limited information on the effect of oral conditions on their quality of life. To date the third National Oral Health Survey[6] is the only study to have reported the prevalence of impacts associated with oral conditions in Sri Lankan adolescents. According to that survey 14% of 12-year-olds and 12% of 15-year olds had experienced pain or discomfort during the 6 months immediately preceding the survey. Therefore there is a need for more detailed studies on oral health related quality of life of Sri Lankan adolescents. Information gathered from such studies could help in the better understanding of the oral health needs of adolescents. The aim of the present study was to determine the impact of perceived oral problems on daily performance in 15-year-olds attending public schools in the Kandy education zone.

Materials and methods

Ethical clearance for the present study was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Colombo. Written informed consent was obtained from parents while permission to conduct the study was obtained from the zonal director of education and the principals of the respective schools.

This study was conducted among 15-year-old students attending public schools in the Kandy education zone. Public schools in Sri Lanka are classified into three groups: Types 1AB, IC and 2. There are 93 public schools in the Kandy education zone and 21, 29 and 43 are classified as Types 1AB, 1C and 2 respectively.

The formula for estimating a population proportion with absolute precision was used to calculate the sample size. As the prevalence of oral impacts in 15-year-old students attending public schools in the Kandy education zone is not known, for the purpose of calculating the sample size the prevalence of oral impacts was considered as 50%. When the expected population proportion is unknown the safest choice for the population proportion is considered as 50%.[7] Accordingly, the minimum sample size required for the present study using a prevalence estimate of 50% at a 95% confidence level and accepting a sample error of 5% was 384. Since it was decided to use the cluster sampling method to select the sample, it was necessary to make allowance for the design effect which was considered as 1.5. After making adjustments for the design effect and non-responses (4%), the sample size required was 599.

The sample was selected in two stages. As students who had their 15th but not their 16th birthday were in the 10th grade class, this class was considered as the unit of cluster while the average number of students in a grade 10 class (n=30) was considered as the cluster size. Therefore 20 clusters were necessary to obtain the sample (600/30=20). The 20 clusters were allocated proportionately to the three types of schools based on the total number of grade 10 students in each type of school; 10, 8 and 2 clusters to Types 1AB, 1C and 2 schools respectively. It was decided to obtain two clusters each from five Type 1AB schools, two clusters each from four Type 1C schools and one cluster each from two Type 2 schools. The schools to be included were selected randomly from a list of schools obtained from the education authorities. If a school had more than two grade 10 classes, the two clusters to be included were selected randomly. When the size of the cluster was more than 30, the 30 students to be included were selected randomly. If a size of the cluster was less than 30 in a selected Type 2 school, the next school on the list was considered to obtain the remaining students.

Data were collected by means of a pre-tested self administered questionnaire. The questionnaire included items on socio-demographic data, perceived oral problems at the time of responding to the questionnaire and the Sinhala translation a modified version of the Oral impacts of Daily Performance index (OIDP)[8] which had

been validated previously.[9] The ODIP index assesses oral impacts associated with 8 daily performances: eating, speaking, cleaning teeth, maintaining usual emotional state, relaxing and sleeping, studying and social contact. The students who perceived oral problems at the time of responding to the questionnaire were then requested to indicate the frequency at which they experienced an impact on each of the 8 daily performances on a 5-point scale: 0=never; 1=hardly ever; 2=occasionally; 3= fairly often; 4=very often. Finally for those who reported an impact either occasionally or at a higher frequency (fairly often/often) on any of the 8 performances were then requested to indicate the main perceived cause for that impact.

SPSS 13.0 software (SPSS Inc., Chicago, USA) was used for data analysis. The prevalence of impacts in those who perceived oral problems was determined by the percentage who reported that at least one daily activity was affected. Associations between different perceived oral problems and the presence of impacts were determined by the chi square test. Explanatory variables (perceived oral problems) which were associated with the dependent variable (presence of impacts) at $p<0.05$ were included in a multiple logistic regression analysis to determine the independent effects of explanatory variables on the dependent variable.

Results

Of the 600 students selected to be included in the sample, 591 participated giving a response rate of 98.5%. Nearly 57% of the sample was girls. Sixty percent (n=354) of the sample had perceived an oral problem at the time of responding to the questionnaire.

The distribution of perceived oral problems at the time of responding to the questionnaire in the sample is presented in Table 1. The most common perceived oral problem was malpositioned teeth (28%) followed by deposits on teeth (18%) and sensitive teeth (10%).

Table 2 shows the prevalence of impacts on daily performance according to perceived oral problems. The prevalence of oral impacts on

Table 1. Distribution of perceived oral problems in the sample (n=591)

Perceived oral problem†	Prevalence of perceived oral problems	
	n	%
Decayed teeth/cavities	48	8.1
Toothache	49	8.3
Painful gums	11	1.9
Bleeding gums	22	3.7
Retained roots	12	2.0
Sensitive teeth	60	10.2
Deposits on teeth	106	17.9
Malposed teeth	166	28.1
Others*	33	5.6
Any oral problem	354	59.9

***Includes oral ulcers, trauma to teeth, cleft lip/palate**

† Multiple responses were allowed

Table 2. Prevalence of impacts on daily performances according to perceived oral problems

Perceived oral problems	Impacts on daily performances																	
	At least one impact*		Eating		Speaking		Cleaning teeth		Relaxing/ sleeping		Emotion		Smiling		Studying		Social contact	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Decayed teeth (24)	17	70.8	14	58.3	4	16.7	8	33.3	4	16.7	5	20.8	0	0.0	4	16.7	1	4.2
Toothache (14)	14	100.0	13	92.9	3	21.4	4	28.6	2	14.3	2	14.3	1	7.1	1	7.1	1	7.1
Sensitive teeth (23)	22	95.7	20	87.0	3	13.0	2	8.7	1	4.3	1	4.3	1	4.3	1	4.3	1	4.3
Deposits on teeth (41)	32	78.0	8	19.5	6	14.6	15	36.6	5	12.2	16	39.0	24	58.5	5	12.2	12	29.3
Malpositioned teeth (103)	78	75.7†	23	22.3	20	19.4	25	24.3	9	8.7	25	24.3	58	56.3	13	12.6	21	20.4
Others** (30)	20	66.7‡	11	36.7	3	10.0	10	30.0	2	6.7	4	13.3	4	13.3	2	6.7	4	13.3
Multiple problems ***(117)	108	92.3**	74	63.3	31		57	48.7	35	29.9	46	39.3	61	52.1	23	19.7	39	33.3
Any problem (354)	292	82.5	163	46.0	70	19.8	121	34.2	58	16.4	100	28.2	150	42.4	49	13.8	80	22.6

* includes those reporting an impact "hardly ever" or at a higher frequency

** includes any one of the following conditions; bleeding gums, painful gums, retained roots, trauma, oral ulcers
Number who perceived the condition is given bracket

*** **includes those who perceived that they had of more than one oral problem**

† P=0.02, ‡ P=0.015, **P=0.0012

Table 3. Multiple logistic regression analysis for associations between the presence of impacts and perceived oral problems (n=352)

Variable	OR	95% CI	P value
Malpositioned teeth	0.62	0.31- 1.24	0.18
Other problems*	0.40	0.16- 1.04	0.052
Multiple problems	2.40	1.02-5.65	0.04

Dependent variable, oral impacts dichotomized as 0=absent; 1=present

* includes those reporting any one of the following conditions; bleeding gums, painful gums, retained roots, trauma, oral ulcers

Table 4. Main perceived cause for impacts on daily performances

Daily performance	Main perceived cause for impact	N	%
Eating (101)	sensitive teeth	39	38.6
Speaking (29)	malposed teeth	18	62.1
Cleaning teeth (64)	bleeding/painful gums	18	28.1
Relaxing and sleeping (19)	toothache	6	31.6
Maintaining emotional state (29)	malposed teeth	10	34.5
Smiling (95)	malposed teeth	59	61.5
Studying (11)	others	5	45.5
Social contact (29)	malposed teeth	15	51.7

Number reporting the impact on daily performance occasionally or at a greater frequency in bracket

daily performance in those who perceived one or more oral problems was 83% and eating was the most common performance affected (46%) followed by smiling (42%). The prevalence of impacts associated with the different oral problems ranged from 68-100%. All students who had experienced toothache reported oral impacts (100%) while the prevalence of oral impacts in those who reported malpositioned teeth was 76%. There were statistically significant associations between the prevalence of impacts and having malpositioned teeth, "other problems" and multiple oral problems. Eating was the most common performance affected in those who reported tooth decay, toothache, sensitive teeth, "other oral problems" and multiple oral problems while smiling was the most common performance affected in those who reported having malpositioned teeth and deposits on teeth.

The multiple logistic regression analysis for associations between the presence of impacts and perceived oral problems is given in Table 3. The odds of experiencing impacts was 2.4 time higher in those who reported multiple problems than those who did not report multiple problems.

Table 4 shows the main perceived cause of impact on each of the 8 performances. Presence of malpositioned teeth was perceived as the main cause of impacts on 4 daily performances; speaking, maintaining emotional state, smiling and social contact. Sensitive teeth, bleeding/ painful gums and toothache were perceived as the main cause for impacts on eating, cleaning teeth and relaxing/sleeping respectively.

Discussion

According to the findings, 60% of students had perceived oral problems. This finding is much higher than what has been reported previously for Sri Lankan adolescents of the same age group. In their study Perera and Ekanayake[10] have reported that perceived awareness of oral problems was 26% among 15 year olds. A similar finding (26%) has been reported for 15 year-olds in the third National Oral Health Survey of Sri Lanka.[6] A plausible explanation for the difference between studies may be that the prevalence and severity of oral diseases was higher in this sample of students compared to those in previous studies. The most common perceived oral condition in the sample was malpositioned teeth (47%). This could be attributed to the fact that during adolescence there is greater concern about the physical appearance and attractiveness. On the other hand in studies where populations considered were younger (11-12 year olds) to that of the present study, toothache (85%) and sensitive teeth (76%) which are symptoms associated with advanced stages of dental caries were the most common perceived oral problems.[2,4]

The prevalence of impacts on daily performances was very high in those who perceived oral problems at the time of responding to the questionnaire with nearly 83% reporting at least one impact. However, despite the fact that the prevalence of perceived oral problems was high as 96% among Italian adolescents, only 67% had reported impacts on daily performance.[11] Moreover Mashoto *et al*[12] in their study found that 72% of Tanzanian adolescents perceived oral problems but the prevalence of oral impacts on daily performance was only 36%. When the impact on individual performances was considered, it was evident that eating (46%) was the most common performance affected. Similar findings have been reported in other studies as well.[2,5]

The prevalence of oral impacts was higher in those who perceived symptoms associated with dental caries and periodontal disease such as toothache, sensitive teeth and deposits on teeth than those who reported malpositioned teeth (76%). This implies that dental caries and periodontal diseases had a greater impact on quality of life than malocclusion in this sample of students. A similar pattern has been observed in Peruvian 11-12 year olds.[2] In that study, the prevalence of impacts on daily performances was considerably higher in those who reported toothache (85%), bleeding gums (51%) and swollen, inflamed gums (53%) than those who reported "badly positioned teeth" (35%). According to the multivariate logistic regression analysis, only the perception of "multiple oral problems" had an independent effect on experiencing impacts. In contrast a study on Brazilian 11-12 year olds found significant independent associations between the prevalence of oral impacts and perceptions of sensitive teeth, gingival bleeding and inadequate positioning of teeth.[4]

To the best of knowledge this is the first study to report the impact of different perceived oral problems on each of the 8 performances considered in the OIDP index. The results indicate that the pattern of impacts on daily performance varied according to the type of perceived oral problem. Impacts experienced were primarily related to physical performances; the majority of the reported oral conditions had mainly affected eating. However smiling was the most commonly affected daily performance in those who reported malpositioned teeth and deposits on teeth.

The presence of malpositioned teeth was perceived as the main cause of impact on 4 of the 8 performances; speaking, smiling, maintain emotions and social contact. Bernabè *et al*[13] have also reported that malocclusion was perceived as the main cause of impact on speaking, cleaning the mouth and smiling by 16-17 year old British adolescents. On the other hand 15-year-old Thai adolescents had perceived oral ulcers

as the main cause for oral impacts.[5] Sensitive teeth, bleeding/painful gums and toothache were perceived as main causes for difficulty in eating, cleaning teeth and sleeping respectively. This is in agreement with the findings of a study on 11-12 year old Thai children.[14]

The presence of multiple oral problems complicates the question how a specific oral problem is associated with the experience of oral impacts. Of those who reported oral problems, 33% had perceived multiple oral problems ranging from 2-5 conditions and they were considered as a separate entity in the analysis. It could be argued that it is more appropriate to assess the impact of different disease combinations rather than the overall effect of multiple problems on oral health related quality of life. But as there were numerous combinations of perceived oral problems such an analysis was not practical. This could be considered as a limitation of the study.

In conclusion, this study which is the first to report the impact of perceived oral problems in Sri Lankan adolescents found that the prevalence of oral impacts was 83% and eating was the most commonly affected daily performance. Those who reported multiple oral problems significantly experienced more impacts than those who did not report multiple oral problems. Also the pattern of impacts experienced varied according to the type of perceived oral problem.

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Review Article

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Dental Plaque as a Microbial Biofilm: OMIC Biology Perspective

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Abstract

Dental plaque is the aetiological agent for major dental diseases such as dental caries and periodontitis. Dental plaque is a surface-attached structured microbial community or a "biofilm" unlike the free-floating or planktonic counterparts, which can be found in fluids such as saliva. The concept of microbial biofilm is relatively new, having a history of few decades. However, we have realized that biofilm is the predominant growth mode of microorganisms in nature and at least 65-80% of all human infections including dental caries and periodontal disease are associated with biofilms. The major property of the microbial biofilm is the high level of drug resistance, which is directly associated with therapeutic failure. The advent of OMIC biology techniques such as genomic, proteomic, metabolomics and transcriptomics coupled with the development of bioinformatics tools and databases have greatly facilitated the understanding of microbial biofilms and provided much needed clues for new treatment options. In this mini-review, the techniques and implications of OMIC biology in the field of microbial biofilms focusing on the dental plaque biofilm will be discussed. Clinical relevance of these findings and future directions will also be discussed.

Microbial biofilms

Dental diseases such as dental caries and periodontal diseases have a long history, going back to the early days of human civilization where some kind of treatments exist for the dental diseases. Although no documented evidence of scientific exploration of the dental diseases at that time could be found, there is anecdotal evidence such as "tooth worm concept" suggesting a belief of an infectious agent.[1,2] Therefore, dental treatment in the past would have been aimed at elimination of this "tooth worm" in order to cure the disease. Antony van Leeuwenhoek's discovery of "animalcules" or bacteria in 1683 herald a new era of looking at the aetiological agents for infectious diseases in a more scientific way.[3] One of the first few specimens of Leuwenhoek was the "white little matter between his teeth (dental plaque). He described his observation as "An unbelievably great company of living animalcules, swimming more nimbly than any I had ever seen up to this time. The biggest sort... bent their body into curves in going forwards". Now we know that "biggest sort" is *Selenomonas* species. In fact, there are reports showing that *Selenomonas* can be associated with periodontal disease as well. However, until 1970s, all the microbiological studies were based on the bacteria in suspension or the "planktonic" mode. It is only recently that work of Costerton and colleagues proved that microorganisms in nature preferably adhere to a surface and form communities now known as "microbial biofilms".[4] Incidentally, Costorton depicted dental plaque as an example in his first article on microbial biofilms in 1978.[5,6]

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Biofilm concept was a "game-changer" not only for the field of microbiology, but also for other areas such as medicine, food industry, water research, etc. Subsequent studies revealed that biofilm is the predominant mode of microbial growth in nature as opposed to the "planktonic' mode. More important, it was found that at least 65-80% of infectious diseases are related to the biofilm mode of growth.[7] Therefore, it is important that clinicians keep abreast of recent findings in the field of microbial biofilms.

There are millions of bacteria in suspensions like saliva and simple deposition of the bacteria onto the surfaces such as oral mucosa or tooth does not necessarily lead to the biofilm formation. Biofilms results from an organized set of events (Figure 1).[8-9] First, microorganisms in suspension mode come into contact with a surface and adhere. Second, the adhered organisms start multiplying and form a small discrete set of colonies followed by a third phase in which they produce extracellular polymeric substance (EPS), which subsequently encase the micro-colonies. Fourth, micro-colonies and EPS arrange into a three-dimensional architecture depending on the composition of the biofilm, nature of the substrate and the environmental conditions. Finally, in a dissociation phase some biofilm cells detach from the community to find new surfaces for colonization (Figure 1). EPS is a unique property seen in the microbial biofilms and it provides some sort of a scaffold to the biofilm community. ESP also prevents direct contact between antimicrobials and microbial cells thus contributing to the increased antimicrobial resistance of the biofilm bacteria. This is also supported by the findings that ESP carries enzymes capable of neutralizing the activity of antimicrobials.[10]

Dental plaque as a biofilm

Hence, all body systems and organs such as oral cavity, gastrointestinal tract, respiratory tract, genitor urinary tract and even conjunctiva are exposed to the exterior environment and are all colonized by microbiota.[11] Each of these niches has a unique set of microorganism. Number of microbial cells colonizing the human body is approximately ten times more than the number of its own cells.[12-13] Oral cavity has both hard (tooth) and soft surfaces (mucosa) for microbial colonization. Hence saliva has a variety of microbes, due to it continuously comes into contact with these surfaces. Recently, Wong and colleagues from University of California at Los Angeles (UCLA) introduced the term "salivaomics" to the scientific lexicon[14] which encompasses various OMIC constituents such as salivary proteome, transcriptome, "microRNA", metabolome and microbiome. Salivary microbiome contains microbes coming from various parts of the oral cavity such as dental plaque, tongue and mucosal surfaces. Although the reported microbial composition in saliva may vary among different studies, in general genus *Streptococcus* is predominant in saliva.[15]

Numerous microorganisms from various sources other than saliva interact with oral surfaces during daily activities such as eating. However not all bacteria that come into contact with the oral surfaces are able to colonize due to the colonization resistance imparted by the resident or commensal microbiota. Oral cavity has a very conducive environment for microbial colonization due to several reasons *i.e.* a hard tooth surface for adhesion and colonization, a warm and moist nutrient rich environment provided by saliva and gingival crevicular fluid, frequent nutrient supply from the host during ingestion of food. Therefore, the microbiota found in all surfaces of the oral cavity is numerous and diverse. Dental plaque, a microbial biofilm predominantly formed on tooth surfaces is of great interest due to its biological and clinical significance.

Formation of dental plaque biofilm follows sequential colonization. As soon as the tooth surface is cleaned, it comes into contact with the bacterial and host products, predominately salivary proteins. Adsorption of these molecules

to the tooth surface forms a thin layer termed "acquired pellicle" consisting of positively charged molecules such as salivary glycoproteins, statherin, histatin, proline-rich proteins, alpha-amylase in the supra-gingival areas and constituents from the gingival crevicular fluid in the sub-gingival areas.[16-17] Bacterial products as gluocosyltransferases (GTFs) and glucan are also found in the acquired pellicle. Then, bacteria start to colonize on this conditioning film, depending on their charge state. At first, they are bound to tooth surface by reversible weak long-range physiochemical interaction between charged molecules.[18] Gram positive are negatively charged due to the phosphate structures of the teichoic acids in their cell wall and become primary colonizers on the tooth surface. Bond between primary colonizers and acquired pellicle become stronger with short-range stereochemical interaction between adhesins of the bacterium and protein receptors of the pellicle. Primary colonisers are mostly aerobic or facultative organisms, which include *Streptococcus (S. sanguinis, S. mitis, and S. gordonii), Veillonella and Actinomyces*.[19-20] They form a foundation for the dental plaque biofilm. This is followed by the establishment of secondary colonizers such as *Fusobacterium nucleatum*, which is known as the "bridging organism" of the dental plaque, although this concept is arguable. In addition, other Gram-negative species such as *Prevotella intermedia, and Capnocytophaga* species may coaggregate with Gram-positive species such as *S. sanguinis and Actinomyces*. The orderly arrangement of these species results in classical microscopic observations such as 'corn cob' and ' test-tube brush' appearance of the dental plaque biofilm. Recent studies with newer techniques such as fluorescent in situ hybridization (FISH) have confirmed these findings.[21] If dental plaque continues to grow due to poor oral hygiene, it provides an opportunity for "tertiary colonizers"- which are Gram-negative anaerobic bacteria species. Some of these organisms such as *Porphyromonas gingivalis, Tannerella forsythia and Treponema denticola* belong to the well known "red-complex".[22] However, there can be variations in the formation of dental plaque and its composition. It has been reported that there are ultra-structural and morphological differences in the dental plaque biofilm between "slow" and "fast' plaque formers.[23]

OMIC Biology

At present it is established that *Streptococcus mutans* and *Streptococcus sobrinus* in the oral biofilms are considered as the major pathogens associated with dental caries, whereas the "red-complex" bacteria *i.e. Porphyromonas gingivalis, Tannerella forsythia,* and *Treponema denticola* associated with sub-gingival biofilms are considered to be the most important pathogens in chronic periodontal disease. The current view of dental plaque biofilm is rapidly changing due to the arrival of OMIC biology. OMIC biology encompasses techniques in genomic, proteomic, transcriptomic coupled with bioinformatics. OMIC view is essentially a "big picture" of the system. In particularly, exciting findings have been made with the use of metagenomics, a field which examine the global microbial composition of samples. For instance, researchers have looked into the microbiomes of various body surfaces including oral cavity as metagenomic approach is able to identify the culturable as well as uncultivable microorganims. In this way, hitherto undescribed species have been discovered. Recently introduced tools in metagenomic, such as next-generation sequencing (NGS) and Illumina high-throughput sequencing, have shown deeper understanding of the microbial communities. A study using pyro-sequencing technique has indicated that number of bacterial types in the mature dental plaque biofilm could be as high as 19,000 taxa.[24-25]

Studies have suggested several bacterial pathogens other than mutans streptococci such as *Granulicatella, Veillonella, Bifidobacteriaceae,* and *Scardovia* are contributory to dental caries. A recent metagenomic study compared the salivary bacterial microbiome of edentulous

infants with their mothers. *Streptococcus* was the predominant genera in infant saliva (62.2%) compared to the adults (20.4%). In addition, infants had *Veillonella, Neisseria, Rothia, Haemophilus, Gemella, Granulicatella, Leptotrichia,* and *Fusobacterium* as predominant microorganisms. On the contrary, mothers had *Haemophilus, Neisseria, Veillonella, Fusobacterium, Oribacterium, Rothia, Treponema,* and *Actinomyces* as predominant microorganisms. In addition, another study showed that classical cariogenic bacteria *S. mutans, S. sobrinus* and *L. acidophilus* are present in all samples collected from saliva, tongue, mucosa and dental plaque of both healthy as well as caries-active subjects. Therefore, it is tempting to speculate that pathogenesis of dental diseases such as dental caries and periodontitis will be revised in near future with the advancement of OMIC perspective of the dental plaque biofilm.

The major feature of the microbial biofilm including that of the dental plaque is their higher antimicrobial resistance. Therefore, numerous studies in the past have examined the reasons for this high resistance in the biofilm mode of growth and several hypothesis have been proposed by the researchers to explain this property of biofilms; i) altered metabolic activity ii) presence of extra cellular matrix iii) persister or sleeping cells iv) differential gene/protein expression v) higher anti-oxidative capacity. Although the use of antimicrobials in dentistry is not a common practice due to polymicrobial nature of the diseases, some clinical conditions require antibiotics treatment. However, studies have shown that standard clinical dosage of antibiotics that supposed to work for planktonic bacteria do not work well against the bacteria in dental plaque biofilms.[26-27] We have shown that 0.2 % chlorhexidine which is commonly used in mouth rinses as a chemical antimicrobial agent, is ineffective for *Enteroccocus faecalis* biofilms. Therefore, some of studies have also used OMIC biology approach to study the mechanisms behind this drug resistance.

Proteomics of microbial biofilms

During the last few decades, research of microbiota have moved from hypothesis driven studies *i.e.* looking for specific answers to specific questions, to hypothesis-free OMIC biology approach - study the system as a whole by global expression profiling.[28-30] This review will focus on the proteomic approaches employed in microbial biofilms. "Proteome" denotes "protein complement of the genome".[31] Hence, proteomics is defined as the scientific field that study the entire set of proteins expressed by an organism at a given point of time under a defined set of conditions.[32] Unlike transcriptomic, proteomic changes are more relevant to the actual biological functions occur at the cellular level. Transcriptomic expression does not fully represent the cellular activity of a cell at a given time. Hence, proteomic techniques allow researchers to understand how microbial cells respond to the environmental conditions or other microbiota by expressing different set of proteins.

Proteomics aims to evaluate the protein expression, which reflects the cellular status during growth, development and response to environmental changes. In addition, post-translational modifications occur at these events can also be monitored. Researchers have used proteomic techniques to comparatively evaluate the differential protein expression profiles between planktonic and biofilm mode of microorganisms including that of oral bacteria and fungi. In addition, some studies have looked into the protein expression profiles during the interaction of host cells with bacterial pathogen.

There are two major technical strategies used by proteomics researchers *i.e.* gel-based proteomics and gel-free mass spectrometry-based proteomics. Combined use of both gel-based and gel-free techniques is able to produce more robust information.[33] Brief account of proteomics techniques is given here and readers are referred to the recent reviews for more technical information.[34-35]

Gel based proteomic separates the protein in two-dimensions, first according to the isoelectric point and second according to the molecular weight (Figure 2). Hence, it is known as two-dimensional gel electrophoresis (2-DE). In first dimension, proteins are separated in an immobilized pH gradient depending on their isoelectric point *i.e.* isoelectric focusing (IEF) and subsequently separated by poly-acrylamide gel electrophoresis (PAGE). 2-DE was first was developed in 1978 and subjected to many variations and improvements over the time. Gel-based proteomics allows researchers to visualize the proteomics map of the study samples, which facilitate the downstream analysis. In addition, it also provides information about the size, isoelectric point and the abundance of the proteins. Therefore, researchers can perform a comparative analysis of the protein abundance between samples under investigation prior to the mass-spectrometry analysis. Comparative proteomics analysis can be performed using software systems such as PDQuest (BioRad), ImageMaster (Amersham Biosciences) and Decyder. More recently, variation of 2-DE that use the fluorescent tags to visualize the proteins was developed. This is called two-dimensional difference in gel-electrophoresis (2D-DIGE), which is a highly quantitative method. DIGE make use of fluorescent dyes Cy2, Cy3, and Cy5 to label the protein lysate before running the gels.[36-37] Hence, three samples can be run in a single gel, which minimize the sample variation. In addition, posttranslational modifications such as phosphorylation and glycosylation can be detected by Pro-Q Emerald, and Pro-Q Diamond staining, respectively. However, gel-based proteomics suffer from several limitations such as lack of reproducibility, co migration of proteins and limited ability to resolve hydrophobic proteins.[38-39] In general, gel-based proteomics methods are labor-intensive, time-consuming and difficult to automate.

Subsequently proteins spots are excised from the gels manually or robotically and subjected to mass-spectrometry analysis. Then, proteins are subjected to tryptic digestion and spotted on to a sample plate for matrix-assisted laser desorption ionization (MALDI) MS/MS analysis.[40] Newer techniques such as "shotgun proteomics" are based on the direct LC separation of peptides and subsequent analysis with a tandem mass spectrometer.[41] Novel tandem mass spectrometry (MS/MS) has enabled de novo sequencing to replace traditional peptide mass finger printing (PMF).

Although 2-DE has conventionally been the stronghold of proteomics, recent advances have made, MS-based proteomics increasingly popular.[42-43] Chromatographic techniques such as ion exchange column followed by reverse phase C18 column could be used to separate the complex proteins mixtures before MS. Eluting fractions could be subjected on-line to mass spectrometer for MS/MS analysis using electrospray ion source (ESI), or spotted on a sample plate for matrix-assisted laser desorption ionization (MALDI) MS/MS analysis.[40] In MS- based proteomics, there are two ways to quantify proteins in samples. Differentially expressed proteins can be identified by either isotopic-labeling or label-free MS analysis. Differential isotopic labeling methods such as isotope-coded affinity tags (ICAT), stable-isotope labeling by amino acids in cell culture (SILAC), iTRAQ, and TMT have been used for relative quantification in proteomics studies including that of biofilms.[44-46] Label-free strategies based on counting unique spectra or peak intensities have revolutionized the field of proteomics. However, hitherto label-free proteomics strategies have only been applied to a limited number of studies in microbial biofilms.[47] Improved versions of search engines relying on various algorithms such as MASCOT, SEQUEST, OMSSA, and X! Tandem are available for spectral matching and correct identification of proteins. Mass-spectrometry proteomics strategies are able to resolve thousands of proteins at a time and also identify the post-translational modifications. In addition to

these methods, other techniques such as surface-enhanced laser desorption/ionization-time of flight (SELDI-TOF) MS and protein solid-phase or protein arrays have been included in microbial proteomic studies.[48] However, gel-free approaches are expensive and limited to few laboratories in the world.

Proteomics strategies for oral microbiology research

Only few studies have employed the proteomic techniques to study oral biofilms.[28,49] We have performed comparative proteomic analysis of planktonic and biofilm modes of the oral fungal pathogen *Candida* species in their biofilm formation.[50-51] Using two consecutive studies on *Candida albicans* and *Candida glabrata* we demonstrated that biofilm mode of growth possess higher anti-oxidative capacity compared to the planktonic mode of growth. We postulated that higher-antioxidant activity could be related to the higher drug resistance seen in these biofilms. *Candida* is a commensal fungus, which resides in at least 50% of human oral cavities. However, under certain circumstance, it causes both mucosal and systemic mycoses. Biofilm formation has been shown to be a major virulence attribute of this fungus directly associated with the therapeutic failure.[9] There are also few proteomics studies on oral bacterial biofilms such as *Streptococcus gordonii, Streptococcus mutans, Streptococcus oralis, Tannerella forsythia* and *Porphyromonas gingivalis*.[47,52-54] However, still the OMIC data on oral biofilms are sparse. More OMIC studies are expected to embark on elucidating the molecular mechanism of oral biofilms in near future including in vivo dental plaque biofilm.

Concluding remarks

OMIC biology has undoubtedly opened a new view of the dental plaque biofilm, its composition, properties as well as relationship to the health and disease status. With this advancing knowledge, it will not be surprising if the current theories of the pathogenesis of dental diseases have to be rewritten in future. Clinicians must keep abreast of this current knowledge as fasting developing OMIC biology research may bring new diagnostics as well as therapeutic options for dental diseases.

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Case Report

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A case report of microsurgically assisted Bilamminar Procedure for Root Coverage using free rotated papilla autograft

Arpita Ramisetti, Sudhir Ramisetti

Abstract

Given the high rate of gingival recession defects among the general population, it is imperative that dental practitioners have an understanding of the etiology, complications and treatments of the condition. Periodontal plastic surgical procedures have been reviewed in the dental literature and assessed for their validity so as to provide the practitioner with the knowledge required in making patient-centred, evidence based decisions with respect to the treatment of gingival recession. Connective tissue grafts have proven to be statistically, significantly superior to other procedures. But coverage of multiple tooth recessions with this procedure has some shortcomings, main being patient morbidity due to the need of larger second surgical wound at the donor site. This is a case report of multiple root recession treated using a modified connective tissue grafting procedure, the free rotated papilla autograft (FRPA) using periodontal microsurgery. The advantages of this technique areuse of a single surgical site, avoid second palatal surgical site, good color compatibility with adjacent tissue and healing by primary intension.

Keywords: free rotated papilla autograft, coronally advanced flap, periodontal microsurgery, gingival recession, bilaminar procedures, root coverage

Introduction

Gingival recession is defined as the apical migration of the junctional epithelium with exposure of root surfaces.[1-3] It is a common condition and its extent and prevalence increase with age. It has been estimated that 50% of the population has one or more sites with 1mm or more of such root exposure.[4,5] This prevalence rate increases to greater than 88% for individuals who are 65 years or older.[1] There are various aetiological factors and complications that make gingival recession a concern for patients. Aetiological factors include, but are not limited to, malposition of teeth, poor oral hygiene, aggressive toothbrushing and orthodontic treatment.[1,4,6] Gingival recession puts the patient at risk for root caries and abrasion/erosion of roots due to exposure to the oral environment. The chief complaint of patients who present to dental offices with gingival recession are dentin hypersensitivity and esthetic distress as a result of aetiological factors and/or their sequelae.

A variety of periodontal plastic surgical techniques, displaying different degrees of success, have been reviewed in the dental literature and assessed for the validity in treatment for gingival recession.[1,2,7,8] This information provides the practitioner with the knowledge required in making patient-centred, evidence based deci-

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sions with respect to the treatment of gingival recession.[2] The coronally advanced flap (CAF) combined with free connective tissue graft is proven to be a predictable method for achieving root coverage in buccal gingival recession. Nevertheless, this procedure conventionally requires involvement of a second surgical site usually the palate.[7,8]

The success of any surgical procedure is dependent upon a surgically atraumatic approach, which is usually limited by the surgeon's skill and the perception of human eye. The use of optical magnification with the aid of loupes and microscopes permit refinement of the surgical technique.[9,10] Surgical loupes have proved to be an invaluable tool in the clinical periodontal microsurgery by enhancing surgeon's visual acuity, allowing better manipulation and more accurate suturing of the soft tissues.[11] Along with microsurgical instruments, low tissue trauma, excellent flap control and a suturing technique that allows primary wound closure may be responsible for improved clinical success.[12,13]

Free Rotated Papilla Autograft (FRPA) procedure (Tiniti & Parma- Benfenati,2004)[14] combines subepithelial connective tissue grafting, coronally advanced flap and periodontal microsurgery in order to achieve root coverage. As per the original report, the procedure was used to treat cases of adjacent teeth shallow Miller' class I or II recession (2-4.5mm deep). The purpose of this approach was to minimize the postsurgical course and patient discomfort in recession treatment by involvement of a single surgical site. The present case report involves two adjacent teeth with Miller' class I gingival recessions treated with periodontal microsurgery using this modified connective tissue grafting procedure - the free rotated papilla autograft (FRPA).

Materials & Methods

A 33-year-old woman who exhibited multiple maxillary recessions was referred to the Department of Periodontics, Mamata Dental College, Khammam, Andhra Pradesh. On intraoral examination, maxillary right first and second premolar exhibited Miller's Class I recessions (4 & 3 mm respectively) along with normal alignment of teeth in the arch, radiographic evidence of sufficient interdental bone adjacent to the involved tooth and maintenance of good oral hygiene. The lesions were probably caused by anatomic traits associated with traumatic tooth brushing. General health condition of the patient was good with no history of periodontal surgery during past 12 months.

After signing a consent form for surgical therapy, the patient was instructed in correct oral hygiene techniques and placed on a prophylaxis program until inflammatory indices reached zero. At the baseline, preoperative photograph was taken (Figure1) and the following clinical parameters were recorded using William's graduated periodontal probe- *Recession height* (*RH*=measured from the Cemento-Enamel Junction (CEJ) to the gingival margin), *Recession width* (RI = distance between the mesial gingival margin and the distal gingival margin measured at CEJ), *Width of keratinized gingival* (WKG= the distance from the marginal gingiva to the mucogingival junction), *Probing pocket depth* (PPD= the distance from the gingival margin to the base of the pocket), *Clinical attachment level* (CAL= the distance from the CEJ to the base of the pocket).

Surgical Technique

The microsurgical aid used for the free rotated papilla autograft combined with coronally advanced flap procedure was a simple microsurgical loupe (MS surgicals, Chennai) with a 2.5x magnification. The microsurgical instruments used consisted of a microsurgical scalpel, a microsurgical anatomical forceps, microsurgical needle holder, elevator and a microsurgical scissor, usually used in surgical ophthalmology.

Preparation of the recipient site

After anesthetizing the recession site with 2% lignocaine, a careful debridement of the root

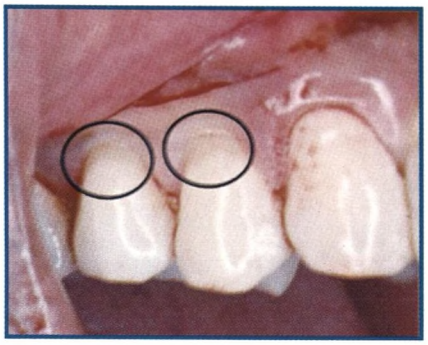

Figure 1. Pre-operative photograph showing miller's Class I recession

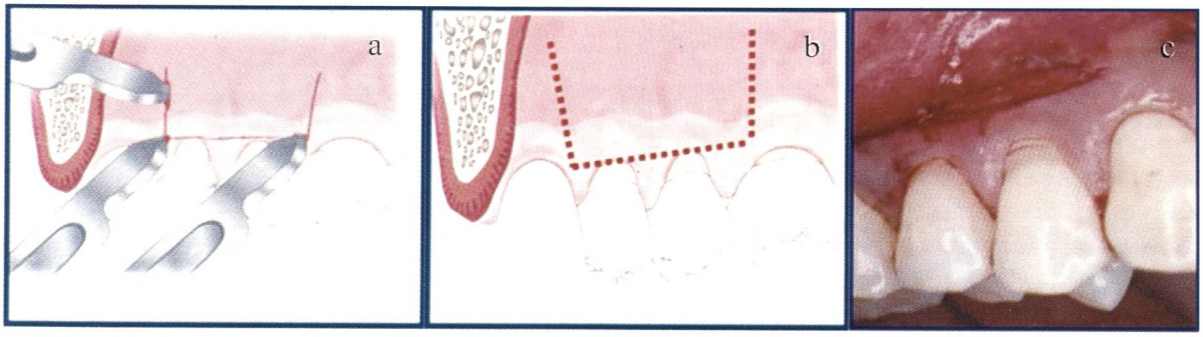

Figure 2. a,b,c: Trapezoid incision

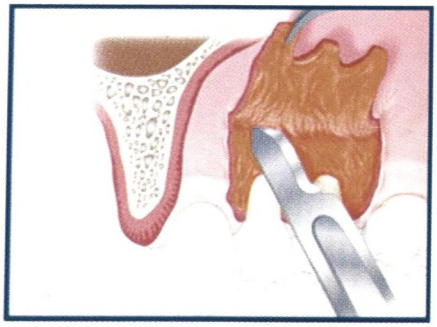

Figure 3. Flap reflection at the recession site

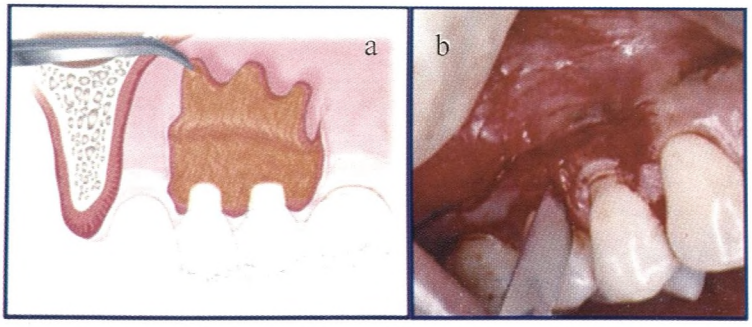

Figure 4. a,b, De-epithelialization and preparation of the donor site (interdental papilla)

Figure 5. a - Donor site, b - harvested papillary connective tissue graft, c - donor site after harvesting the graft

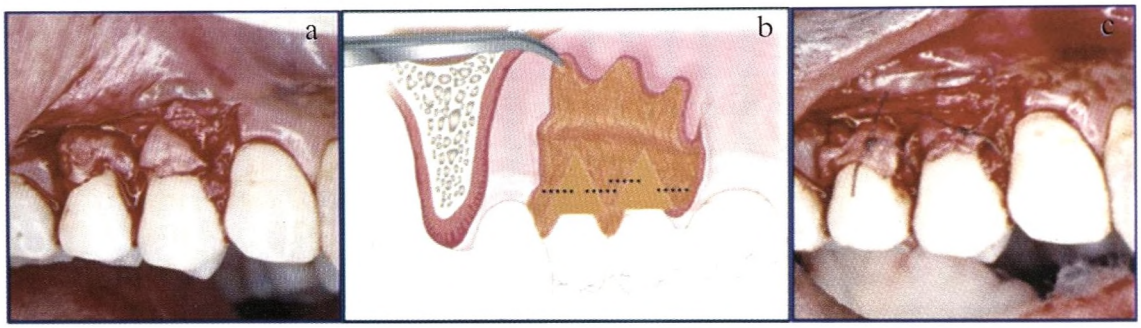

Figure 6. a - graft placed at the recession site, b & C: graft approximated sutured over the recession

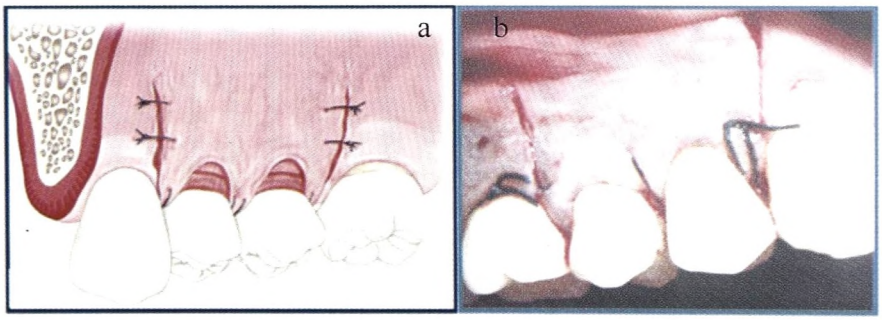

Figure 7. a, b: Flap coronally advanced and sutured over the papillary connective tissue graft

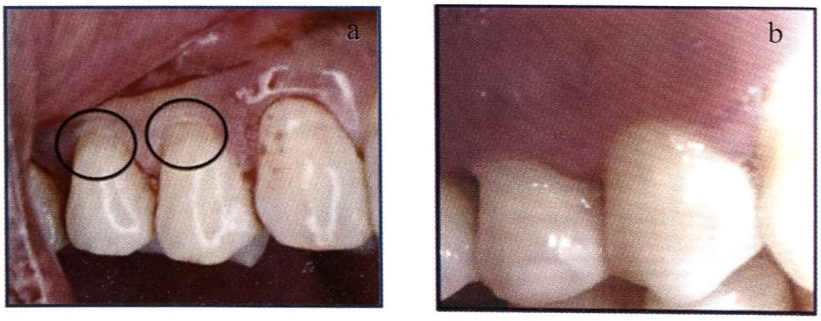

Figure 8. a - Preoperative view, b - 6 month post operative

surface by hand instruments and flattening of the root prominences by rotating burs was performed. A vertical beveled sharp incision was placed up in the vestibule distal to the recession, continuing horizontally below the line joining the interdental papillae and finally ending in another vertical beveled releasing incision mesial to the recession itself (Figure 2 a,b,c). A full thickness trapezoid flap was then raised, preserving the adjacent papilla and undermining the soft tissue by sharp dissection, taking care to remain parallel to the tooth surface (Figure 3). The papillary area (except a small collar of tissue just apical to contact point to preserve morphology and vascularity) adjacent to the recessions were de-epithelized to serve as the donor site. (Figure 4 a,b)

Harvesting, Transfer and Stabilization of Graft

At this point, the buccal papillary tissue of the de-epithelialized papilla was excised (Figure 5 a, b). These papillary grafts were rotated 180° to place its base at the CEJ, matching with the exposed root surface (Figure 6a). The graft was then stabilized by a horizontal absorbable suture (Ethicon monocryl 5/0) secured to the adjacent periosteum (Figure 6 b,c). The previously raised flap was then coronally positioned to completely cover the grafts on the recession sites, taking care of avoiding any tension to the gingival tissue. Vertical mattress sutures for papillae and interrupted sutures for vertical releasing incisions were placed to obtain stable and complete wound closure. (Figure 7 a & b).

Postoperative Instructions

A periodontal dressing was applied. Antibiotics (amoxicillin 500mg 8 hourly for 5 days) and analgesics (ibuprofen 400mg for 5days) were prescribed. Post operative instructions were first explained to the patient and handout of these postoperative instructions was given as a reinforcement. Patient was recalled after 14 days for suture and periodontal dressing removal.

Follow Up Visits

On the 14th post operative day, the presence of any postoperative sequel was checked. On removal of periodontal dressing and sutures, the surgical site was examined and healing was reviewed. Patient was instructed to use soft brush for mechanical plaque control in the surgical area by a coronally directed roll technique. 0.2% chlorhexidine mouthrinse was also prescribed for four weeks after the surgery.

At follow up visits, all the clinical parameters were recorded and postoperative clinical photographs were taken for comparison.

Results

Healing was uneventful throughout the follow up period. Also, progressive adaptation of the flap edges to the surrounding tissues and increased morphologic and chromatic mimicking was observed. Six months postoperative (Figure 8b), sulcular probing depth was less than 2 mm, and no bleeding on probing was present. Root coverage was complete, with gingival margins reaching the CEJ of both teeth. The patient was placed in a maintenance program consisting of prophylaxis and motivation.

Discussion

The success and predictability of any surgical procedure for treating gingival recessions is based on the amount of complete root coverage. Miller (1987)[16] defined complete root coverage procedure in clinical terms as location of soft tissue margin at the CEJ, presence of clinical attachment to the root, sulcus depth of 2mm or less and absence of bleeding on probing. Using this criteria for success, the subepithelial connective tissue graft (SCTG) described by Langer and Langer (1985)[17], has become the gold standard in the treatment of denuded roots. The use of SCTG for root coverage has demonstrated high degrees of success ranging from 64.7- 95.6%. The combination of CAF with SCTG has predictable and stable results mainly due to the dual blood supply from the underlying connective

tissue base and overlying recipient flap associated with excellent color match.[18-20] The surgical technique per se in any mucogingival surgical intervention has a major role in its successful outcome.

Newer technologies and instrumentation are therefore necessary to help the clinician ensure best results and patient satisfaction. Microsurgery has been thoroughly demonstrated as a useful tool in other fields of dentistry such as endodontics.[21,22] The effectiveness of microsurgical approach for periodontal regeneration and root coverage has been reported by Cortellini et al (2001)[23], Francetti *et al* (2005)[24], etc. Magnification, illumination and increased precision in tissue manipulations result in faster revascularization of graft tissue and minimal tissue damage during surgery.[12,13]

Bilaminar procedures are known to produce excellent results in managing such defects, since these techniques cause minimal damage to vascular supply of both the periosteum and gingival flap. The presence of this dual blood supply results in a more rapid re-establishment of circulation within the free rotated papilla autograft. In this case report, FRPA as a minimally invasive, bilaminar procedure; was used for treatment of two adjacent teeth gingival recession. This procedure is indicated in single Miller's Class I or II root recessions when a wide papilla is present in the mesial or distal aspect of the involved tooth. The clinical outcome of procedure was optimized by the aid of microsurgical loupe, at the same time minimizing the morbidity of the surgical procedure.[25] It is generally seen that when the epithelialized or non-epithelialized connective tissue graft is taken from the palatal region, the patient experiences a higher degree of discomfort at the donor site than at the area involved in root coverage.[24-26] The close proximity of the donor site and the recipient site in FPRA used here, reduced the discomfort of the patients, favoring their acceptance of the procedure. At the same time, primary wound care and good color match was also obtained.

Total recession coverage was seen at the receded premolars. The height and width of the papilla serving as the donor site was also recorded remained unchanged throughout the 6 months study period. Thus, no incidence of marginal soft tissue recessions after the procedure were reported at the donor site similar to the results of Francetti *et al* (2004).[15] The change in the clinical parameters at the recipient site are in accordance with various studies by Harris et al (2002)[26] and Francetti *et al* (2004).[27]

Conclusion

The free rotated papilla autograft combined with coronally advanced flap using microsurgical aid is a predictable and stable method of root coverage for shallow two adjacent teeth gingival recessions. Involvement of single surgical site, faster tissue healing and minimal post operative morbidity, due to the use of periodontal microsurgery proved invaluable for excellent patient compliance and successful treatment outcome of this procedure.

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FDI / CDA / SLDA JOINT INTERNATIONAL CONFERENCE AND 80TH ANNIVERSARY SCIENTIFIC SESSIONS OF SRI LANKA DENTAL ASSOCIATION

ABSTRACTS OF FREE PAPERS & POSTER PRESENTATIONS

27th June 2013 – 1st July 2013

BMICH, Colombo, Sri Lanka

OP 002
DETERMINATION OF FREQUENCY OF SECOND MESIOBUCCAL CANAL IN THE MAXILLARY FIRST MOLALR TEETH USING MAGNIFICATION LOUPES

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Pakistan Introduction: Inability to detect and treat a second mesiobuccal (MB2) canal is a reason for endodontic failure in maxillary first molars. Objective: To determine the frequency of the MB2 in the maxillary first molars with magnification loupes. Materials And Methods: A total of 53 teeth were assessed using a moderate magnification for MB2 in first maxillary molars in vivo. Detection of this canal in maxillary first molars was done through a clinical access cavity preparation with magnification (x3.5). Data was analyzed using SPSS 19. Frequency distribution of variables was determined and the level of significance was kept at 0.05. Results: We were able to detect MB2 in 27 out of 53 (50.9%) of permanent maxillary first molars that were studied. It was found that males tend to have a higher proportion of MB2 (31%) as compared to females in whom the MB2 could be identified only 19% of the time. There was no association found between age, gender and chamber obliteration with the presence of MB2. Conclusions: The frequency of MB2 found at our center was 50.9% out of the total cases evaluated in our study which is a high frequency. In conclusion, within its limitations, this study suggested that use of the magnification loupes enhanced both the detection (50.9%) and negotiation (86.8%) of the MB2 in the permanent maxillary first molars beyond what could be achieved with the naked eye.

OP 005
PROFILE OF THE FUTURE DENTAL SPECIALISTS IN SRI LANKA

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Introduction : Dental Postgraduate trainees constitute a vital component of the dental workforce. They are the future consultants and there were 50 dental specialist trainees undergoing training in 5 dental specialities as at November 2012 in Sri Lanka. However there are no reported studies on dental specialist trainees in Sri Lanka. Objectives : To analyse the profile of the trainees undergoing specialist training, which is necessary for future dental manpower planning. Methodology : A pretested, self administered questionnaire was used to collect data from the above trainees, when they attended a workshop conducted by the Ministry of Health in November 2012. Results: Out of the 50 trainees, 5 were undergoing overseas training which is a component of the overall training. Of the remaining the forty-five, 40 attended the above workshop. Sixty percent of the sample had entered the university Dental School at the 2nd attempt at the GCE Advanced Level examination while 70% had entered the university from the Colombo district. The average age of a trainee was 34 years and 8 months. Fifty seven percent of the trainees were females while 78% percent were married. Fifty four percent had obtained either a first or second class at the Final BDS examination. Only 55% had been successful at their 1st attempt at the MD Part 1 examination, which is the selection examination for enrolment in a specialist training programme. Conclusion : All but one specialist trainee had graduated from the solitary dental school in Sri Lanka. Majority had entered the university dental school, from the Colombo district. Nearly half of the trainees (46%) had failed to obtain either a first or second class at the Final BDS examination. The next generation of dental specialist in Sri Lanka, will be more than 36 years of age, at the time of commencement of their career as a specialist.

OP 007
INTRAORAL BIOPSY- A RETROSPECTIVE ANALYSIS

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Objectives: To determine the relative frequency of intraoral lesions and their clinico-pathologic correlations. Material And Methods: Biopsy records of all intra-ral biopsies done in the department of Oral and Maxillofacial Surgery, B.P.K.I.H.S during the period of August 2011 to July 2012 were

reviewed. The biopsies were divided into three major groups: developmental/inflammatory/reactive lesions (group 1), cystic lesions (group 2), and tumors and tumor-like lesions (group 3). Results: Sixty-three cases were reviewed. Of the 63 cases, 21(33.33%) were in group 1, 16 (25.39%) in group 2, and 26 (41.26%) in group 3. In group 1, irritational fibroma was the most frequent lesion (n = 8; 12%). In group 2, radicular cysts (n = 8; 12%) were more frequent lesions in this group. Precancerous lesions and Squamous cell carcinoma each (n = 6; 9.5%) were more frequent in group 3. Out of 63 cases, a clinicopathological co-relation was found in 51 cases (80.95%). Conclusions: Tumors and tumor-like lesions of the jaw are more common than cystic and inflammatory/reactive lesions in the patients presenting with various intraoral pathologies in our center.

OP008

ASSESSMENT OF "HEALTH PROMOTION PRESCHOOL SETTINGS" IN COLOMBO DISTRICT, SRI LANKA

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Background: The objective of the study was to develop and implement a health promotion intervention to promote healthy behavior among the children in selected preschools. Method: A quasi-experimental study (pre-post design) was conducted to develop and assess the "health promotion preschools". A convenient sampling technique was adopted and the intervention was carried out in 20 selected preschools by trained dental therapists. Phase I: Developing a validated intervention package with certain healthy behavior to be implemented and a pre tested observational check list for pre post assessment of the intervention The intervention package included five major criteria namely; good sanitary conditions, healthy dietary pattern, physical activities, development of health education materials by preschool community and active community participation. Phase II – pre intervention assessment of preschools using observation check list by trained investigators Phase III - implementation of the intervention by dental therapists Phase IV- post intervention assessment preschools using observation check list by trained investigators after six months of the implementation Ethical clearance was obtained from Colombo University. Results: Under the good sanitary conditions; practice hand washing, correct toilet practices, disposal of garbage in hygienic way were observed in all preschools (100%) after the intervention comparing with 50%, 40% and 45% respectively before the intervention. All preschools have started tooth brushing though none of them before the intervention. Safe play area is available in 75% of preschools comparing with 20% earlier. All preschools have adapted to healthy diet, displayed health education materials developed on their own and obtaining active participation from the community after the intervention. Conclusion: with successful results, there is a view of expanding Health Promotion Preschool program across the country.

OP010

AGE ESTIMATION BY MEASURING OPEN APICES OF TEETH IN CHILDREN

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Objective: To estimate and assess the dental age by measuring the open apices of teeth using panoramic radiographs applying linear regression equation. Materials And Methods: This was a retrospective cross-sectional study conducted on 50 children aged between 5-15 years. Seven left permanent mandibular teeth were assessed using panoramic radiographs which were collected from Medical Record Department, taken during the course of diagnosis and treatment. The number of teeth with closed apical and with open apical end of roots were examined and measured. The values were tabulated and placed on the linear regression equation proposed by Cameriere et al for the estimation of dental age. Results: The result showed no significant difference between the dental age (10.13±1.69 years) and chronological age (10.31±1.75 years) (p=0.26). The method underestimated the mean age by 0.11 years and 0.23 years for the boys and girls, respectively. Paired sample t- test showed no significant differences between dental age and chronological age for boys (p=0.546) as well as for girls (p=0.351). Conclusion: The Cameriere

method using European formula was found to be accurate for both genders, as the result did not show significant difference between the chronological and dental age. So this linear regression equation can be applied in the Asian population for the estimation of age and can be used for practical application.

OP011

PREVALENCE OF ORAL LESIONS ASSOCIATED WITH CHEWING HABITS IN DAKSHINA KANNADA DISTRICT OF KARNATAKA, INDIA

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AIM: To assess the prevalence of various types of mucosal lesions associated with different forms of areca nut/tobacco chewing habits. Methodology: Institutional Ethical committee clearance was taken and study was carried out by examining 640 patients with purely chewing habit history for one year, in the Department of Oral Medicine and Radiology, Manipal College of Dental Sciences and at various community oral health camps. A through habit history and clinical examination were done for any oral lesions present. Results And Analysis: The most prevalent chewing habit was Guthka followed by betel quid, tobacco and arecanut or combinations of habit. Oral lesions were present in 352 subjects. The prevalence of oral lesion in decreasing order were- oral submucous fibrosis, chewers, tobacco pouch keratosis, leukoplakia, lichenoid reaction, carcinoma and coated tongue or combination of lesions. Conclusion: Our study revealed a high chewing habit related oral mucosal lesions. There is an urgent need for awareness programs for prevention and early diagnosis for better prognosis.

OP012

BONE REGENERATION IN A RAT MODEL USING INDIGENOUS GTR MEMBRANE

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Background And Objectives: Simvastatin has been shown to increase bone growth and stimulate bone formation in rodents. The purpose of this study was to investigate the role of simvastatin loaded PLGA membrane on bone growth in rats. Materials And Methods: 24 adult rats were divided into 3 groups. Defects were made on the inferior border of the mandible .6 defects in the 1st group were left untreated, 6 defects in the IInd group were treated with PLGA membrane and 6 defects in the IIIrd group were treated with PLGA membrane loaded with simvastatin. CT scans were done for each group 10 days post-surgery and after intervals of 1, 3 and 6 months. Results: Significant differences were noted in the bone density in the CT between the 3 groups. Conclusion: Based on the results of the experiments in this study, it was concluded that, locally-applied simvastatin in PLGA membrane can stimulate significant bone growth at an optimal dose

OP013

TOOTH LOSS AND ASSOCIATED FACTORS AMONG DIABETIC THAI ADULTS

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The purpose of this study was to determine factors associated with tooth loss in patients having diabetes mellitus residing in Dontum district, Nakornpathom province, Thailand, during the year 2012. This cross-sectional analytic study included 185 adults (57 males and 128 females), aged 36 to 85 years, who received an interview and oral health examination. Results were analyzed by means of descriptive, bivariate, and multivariable logistic regression analyses. Findings from descriptive statistics showed that 115 out of 185 adults (62.2 percent) had remaining teeth 20 or more. Results from the final multivariable logistic regression model showed that remaining teeth 20 or more was associated significantly with gingival bleeding, calculus, calculus with bleeding, shallow periodontal pocket, loss of periodontal attachment, dental caries, and use of toothpick with the adjusted odds ratio (95% CI) 0.25 (0.08, 0.74), 0.27 (0.10,

0.72), 0.22 (0.09, 0.54), 0.36 (0.17, 0.77), 0.89 (0.81, 0.98), 0.74 (0.61, 0.88), and 0.11 (0.03, 0.45), respectively. Conclusion can be drawn from the study that several factors are associated with remaining teeth in these adults. Therefore, planning of preventive oral health program based on these factors is necessary in maintaining natural teeth among these Thai people. Keywords: diabetes mellitus; tooth loss; Thailand

OP015

DENTAL CARIES: PREVALENCE, KNOWLEDGE AND DIETARY PRACTICES AMONG FEMALE GARMENT FACTORY WORKERS IN MEDICAL OFFICER OF HEALTH (MOH) AREA MAHARAGAMA

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Introduction- Female garment workers (FGW) are a socially deprived subgroup of the population, who play a key role in addressing the Sri Lankan economy. The objective of this study was to determine the prevalence of dental caries among them and their knowledge and practices related to dental caries. Methods- A descriptive cross sectional study was conducted in four randomly selected garment factories in Maharagama area, among 422 participants. A self administered questionnaire was used to assess their knowledge and a three day dietary chart was used to assess their diet. The oral health examination was conducted using WHO standard oral health examination form. Results- The mean age of the study population was 26 years and the overall prevalence of dental caries 87.2% (mean DMFT 3.42). Twenty five percent of the study participants didn't respond to the diet chart and they had significantly high prevalence of caries than who responded. Only sociodemographic variable which was significantly associated with the prevalence of caries was the level of education ($p< 0.05$), with lesser educational levels had more caries prevalence. Knowledge on dental caries was significantly associated with the age ($p<0.001$) and the level of education ($p<0.05$). Those who are more than 25 years of age and passed G.C.E. (O/L) had better knowledge than their counter groups. However, the knowledge was not associated with caries prevalence. Out of the practices, daily biscuit consumption was significantly associated with caries prevalence ($p<0.001$). Conclusion- Since the prevalence of caries is high among FGW, the health administrators need to pay attention on this issue.

OP016

ORAL HEALTH KNOWLEDGE AND PRACTICES OF CAREGIVERS AND THEIR CONTRIBUTION IN MAINTAINING ORAL HEALTH STATUS OF CHILDREN AT DAY CARE CENTRES IN SELECTED MEDICAL OFFICER OF HEALTH (MOH) AREAS IN COLOMBO DISTRICT

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Introduction: Today economic burden has made both Sri Lankan parents to be employed and their children are looked after by caregivers in day care centres (DCC). Aim of this study was to assess oral health knowledge, practices and caries status of caregivers and their contribution to maintain oral health of children in DCC. Methods: A cross sectional study was conducted among all available caregivers (163) in DCC in three conveniently selected MOH areas in Colombo district. Data collection was done using a pre tested interviewer-administered questionnaire. WHO standard criteria was used to detect caries. Results: The mean age of caregivers was 41 years. Among caregivers 35% were preschool diploma holders and 16.6% were below the GCE-O/L. About 61% of caregivers did not have adequate oral health knowledge. Fluoridated toothpaste was used by 80% and 96% brushed their teeth twice daily. One third of the caregivers had DMFT more than 10 and only 14% were caries free. Oral examination in the children was performed once a month by 35% of the caregivers. Only 16% of caregivers brushed children's teeth at DCC. Washing toys soon after salivary contamination was done by 36% of the caregivers. Statistically

significant association was found between oral health knowledge of the caregivers and once a month oral examination ($p<0.05$) in children and the use of toys by the children without salivary contamination ($p<0.001$). Conclusion: Oral health knowledge of the caregivers and their contribution to maintain oral health status of children in day care centres is poor.

OP017

KNOWLEDGE, ATTITUDES AND PRACTICE OF HAND HYGINE AMONG DENTAL STUDENTS IN CLINICAL YEARS AND DENTAL SURGEONS IN A DENTAL (TEACHING) HOSPITAL IN SRI LANKA.

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Objective: This study assessed the knowledge, attitudes and practice regarding HH among dental students in clinical years and dental surgeons in Dental (Teaching) Hospital, Peradeniya, Sri Lanka. Materials and Methods: A cross-sectional survey was performed using a pre-tested self-administered questionnaire. Scores obtained by participants in knowledge, attitudes and practice regarding HH were compared among groups and associations were explored statistically. Results: Fifty one third-year and 49 fourth-year dental students and 43 dental surgeons participated in the study (n=143). In the total sample, there were significant positive correlations between knowledge and practice ($r = 0.2$; $P = 0.04$), knowledge and attitudes ($r= 0.4$; $P = 0.001$) and attitudes and practice ($r = 0.2$; $P = 0.03$). Significant positive correlations were found between knowledge and attitudes in all three groups. However, correlations between knowledge and practice and attitudes and practice in the fourth-year students and dental surgeons were not significant. Comparison of the means revealed no significant difference in the scores of knowledge, attitudes and practice among three groups. Knowledge and attitudes regarding HH of females were significantly higher than males ($P = 0.04$, 0.02). Large proportions had moderate to high level of knowledge (88.8%) attitudes (95.2%) and practice (99.3%) regarding HH. Conclusions: Overall, knowledge, attitude and practice regarding HH among dental students in clinical years and dental surgeons in the above sample are positively correlated and the scores are comparable among groups. Knowledge in HH correlates well with the attitudes rather than practice of HH. It is likely that females in the study sample have superior knowledge and attitudes regarding HH. The majority has moderate to high level of knowledge, attitudes and practice regarding HH.

OP018

ANTIMICROBIAL EFFECT OF ANACARDIUM OCCIDENTALE LEAVES AGAINST PERIODONTAL PATHOGENS (P.GINGIVALIS & P.INTERMEDIA)

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Objectives: The aim of this study was to investigate the antimicrobial effect of Anacardium occidentale (cashew) leaf extract on Porphyromonas gingivalis and Prevotella intermedia. Methods: Methanol and aqueous extracts of cashew leaves were prepared. Its antimicrobial activity against P.gingivalis and P.intermedia was tested using the disc-diffusion methodology at various dilutions of 75µ , 50 µl, 25 µl, 10 µl and 5 µl respectively. 0.2% Clorhexidine gluconate (CHX) was used as control. Cultures of P.gingivalis and P.intermedia strains were maintained on Kanamycin blood agar .The agar plates were then incubated at 37°C for 48 hours after which the zone of inhibition was measured and the mean was recorded for each test solution. Results: The results demonstrated that, for both P. gingivalis and P.intermedia , the highest concentration(75µl) of both the extracts showed maximum antimicrobial action . For P.ginigvalis, CHX demonstrated better results compared to methanolic extract, however there was no significant difference between CHX and aqueous extract .For P.intermedia, CHX was most effective compared to both the extracts. Conclusions: This study revealed that Anacardium occidentale leaf extracts have significant antimicrobial activity against P.gingivalis & P.intermedia

OP019
MULTIDISCIPLINARY APPROACH FOR RESTORATION OF FRACTURED TEETH - A CASE SERIES

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Traumatic Injuries involving crown and crown-root fractures pose a great challenge rehabilitating it. This usually requires multidisciplinary approach. Orthodontic extrusion may be the suitable approach without risking the esthetic appearance in fracture below the gingival attachment or alveolar bone crest. Extrusion of such teeth allows elevating the fracture line above the epithelial attachment allowing proper placement of the margin.This case series describes the management of sub-gingival fracture involving multidiscipline to restore the tooth to its normal esthetics and function.

OP020
CASE REPORT-DENTAL PAIN OF UNKNOWN ORIGIN

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A nine years young girl from Kekirawa reported with severe intermittent pain on left mandibular area for two weeks duration. She was treated for auricular pain in same side for two months by a medical officer, then treated by consultant ENT surgeon and finally referred to dental surgeon as she had no obvious cause for pain. Identified caries were restored and symptomatic treatment was given. No pain subsided. Radiological findings showed no abnormalities of teeth and jaws. Social history was elicited and found that the girl was having some social problems in the school and to skip from school only pain was manifested by her. Suitable remedies to overcome her social problems were carried out at home and school. Counseling and monitoring were given to parents, class teachers and students. Her dental pain disappeared. She was schooling without any hesitation. Monthly reviews were made for subsequent six months periods during which child had no fresh compliance related to dental or auricular pain. This shows that children may be complaining of dental pain to skip from schooling due to social reasons and this could be diagnosed by exploring into detailed history. Cases like these to be documented and published to guide the clinicians in managing pain without obvious oral & facial pathology.

OP021
WETTABILITY OF ROOT CANAL SEALERS ON INTRARADICULAR DENTINE TREATED WITH DIFFERENT IRRIGATING SOLUTIONS

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Objectives: The aim of this study was to evaluate the wettability of AH Plus and ThermaSeal Plus sealers on intraradicular dentin treated with different endodontic irrigating solutions. Materials & Methods: Fifty anterior teeth were split longitudinally. Samples were then randomly divided into 5 groups (n=10). Group I: 5 mL of 2.5% NaOCl + QMix. Group II: 5 mL of 2.5% NaOCl + 17% EDTA. Group III: 5 mL of 2.5% NaOCl + 7% maleic acid. Group IV: 5 mL of 2.5% NaOCl. Group V: 5 mL of distilled water. Irrigation regimens were performed for 1 min. Each specimen was placed inside a Dynamic Contact Angle analyzer. A controlled-volume droplet of the sealer was placed on each specimen and static contact angle was analyzed. Results: Contact angle made by both the sealers with EDTA irrigated dentin was significantly larger when compared to the other irrigants ($P<0.05$). For ThermaSeal Plus, contact angles produced on maleic acid, NaOCl, and distilled water-irrigated dentin were not significantly different, but were all significantly larger than the contact angle produced on QMix-irrigated dentin ($P<0.05$). For AH Plus, contact angles produced on NaOCl and distilled water-irrigated dentin were not significantly different, but were significantly larger than those made by maleic acid and QMix. Conclusion: When used as a final

irrigant, QMix favors the wetting of root canal dentin by both AH Plus and ThermaSeal Plus sealers. Maleic acid showed a promising result when compared to EDTA and NaOCl. Wettability of both sealers is worst on EDTA irrigated dentin.

OP022

EFFECT OF TOOTH LOSS AND DENTURE STATUS ON ORAL HEALTH-RELATED QUALITY OF LIFE OF INSTITUTIONALIZED OLDER INDIVIDUALS IN SRI LANKA.

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Objective: To determine the effect of tooth loss and denture status on oral health-related quality of life of institutionalized older individuals in Sri Lanka. Methodology: The sample consisted of 408 institutionalized older individuals who were 60 years and above. An interviewer administered validated Sinhala translation of the Oral Health Impact Profile-14 (OHIP-14) scale was used to assess the oral impacts experienced by the sample. A clinical oral examination was carried out following the interview. Those who were very sick, bed ridden, mentally disoriented or with hearing and speech impairments were excluded from the study. SPSS 17 software was used for the data analysis. Results: 36.3% of the sample was completely edentulous. Only 31.7% of completely edentulous were wearing complete dentures. 63.7% of the sample was partially edentulous from which only 16.5% were wearing partial dentures. The most commonly reported impact items were pain, uncomfortable to eat and dissatisfaction with food. A weak association between the oral health status (partial edentulism, complete edentulism, partial denture wearing & complete denture wearing) and the OHIP-14 was found. Conclusion: There is no significant association between tooth loss/denture status and oral health related quality of life in institutionalized older individuals in Sri Lanka.

OP024

PERCEIVED ORAL HEALTH PROBLEMS AND THEIR IMPACTS ON DAILY PERFORMANCE IN 15-YEAR-OLD SCHOOL CHILDREN IN THE KANDY EDUCATION ZONE

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The aim of this study was to assess perceived oral health problems and their impacts on daily performance in adolescents. A descriptive cross sectional study was carried out in government schools in the Kandy education zone. Eleven schools were selected using two stage cluster sampling technique. Data were collected by a self administrated questionnaire from 591 15 year old students who were studying in the grade 10 class. The questionnaire included information related to perceived oral disease conditions, perceived need for care, causes for not obtaining care, as well as a modified version of the oral impacts on daily performance index developed by Adulyanon and Sheiham (1997). Of the total sample, 354 (60%) reported that they had oral health problems at the time of survey. However only 87.3% of them perceived a need for treatment and "lack of time" was cited as the main cause for not obtaining care. Of those who had an oral health problem, 79.1% had experienced at least one impact and the mean percentage OIDP score was 12.16 (SD=12.37) in this group. The most commonly affected activities were eating (46.2%) and smiling (42.3%). The prevalence of oral impacts was significantly associated with having toothache and sensitive teeth. As 60% of the sample had reported that t

OP025

TUMOUR THICKNESS PREDICTS CERVICAL LYMPH NODE METASTASIS IN SQUAMOUS CELL CARCINOMA OF THE TONGUE

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Tumour thickness has a strong relationship with cervical lymph node metastasis in squamous cell carcinoma of the tongue. However thickness of the tumour predicting LNM is controversial. We Maxillofacial Department, Poole Hospital NHS Foundation Trust evaluated thickness of tongue SCC and cervical lymph node metastasis to assess the threshold. The clinical records of 150 patients with primary tongue SCC primarily treated surgically between 2002 and 2012 were reviewed. Tumour thickness measured on histological sections was used to correlate with the cervical LNM status. Tumour thickness exceeding 5mm was statistically significantly correlated with cervical metastasis in early stage of tumours. In our study, tumour thickness was related to the prognosis. The five year survival rates was 97% when the tumour thickness was less than 9mm and 58% when it is >9mm ($p = 0.003$). Conclusion; Thickness of the primary SCC of the tongue has a strong prediction value for cervical LNM. Therefore elective neck therapy is indicated. Key words ; tongue scc, tumour thickness, lymph node metastasis, survival rate.

OP 026

PREVALENCE OF EARLY CHILDHOOD CARIES AMONG PRESCHOOL CHILDREN IN A MUNICIPAL COUNCIL AREA IN SRI LANKA

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Objective: Early childhood caries is one of the most prevalent diseases among preschool children worldwide. The aim of this survey is to assess the level of oral health status and potentially associated variables among the preschool children in Maharagama municipal council area in Sri Lanka Materials and Methods: A cross-sectional survey was conducted in 20 preschools situated in Maharagama area from August to December 2010. Parents/guardians were interviewed to obtain data on demographic and oral health related factors of children. It was preceded by clinical oral examination of preschool children. Data were analyzed using statistical package SPSS. Statistical significance level for statistical tests used (Chi Square, t-test and ANOVA) were chosen as $p<0.05$. Results The study included 501 preschool children between the ages of 3 - 5 1/2 years. The prevalence of ECC and S-ECC were 63.1% and 36.5%% respectively. Prevalence of cavitated lesions including teeth missing due to caries and teeth filled was 53.5% and 26.8% of children had non-cavitated lesions. Mean dmft for the whole sample was 2.17 while for 5 year olds it was 2.7. Significant associations were found between presence of caries and duration breastfeeding at night, frequency of consumption of snacks and history of night bottle feeding. Conclusion: Higher prevalence of ECC among the preschool children in an area where there are more oral health facilities available for children suggests that

OP 027

EVALUATION OF CARDIAC AND OTHER CLINICAL MANIFESTATIONS OF CLEFT PALATE PATIENTS IN SRI LANKA

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Objective: Cleft palate is one of the commonest congenital malformations with a worldwide prevalence of 0.43 to 2.45 per 1000. It is a multifactorial genetic disorder that involves both genetic and environmental factors. The objective of this study was to identify the cardiac anomalies and other clinical manifestations in patients with cleft palate in Sri Lanka. Methods Patients with cleft palate were identified at Regional Cleft Centre & Maxillo-Facial Department, Teaching Hospital, Karapitiya, Galle, Sri Lanka and relevant data were obtained from case notes, interviews and examination of the patient. Results There were 162 cleft palate patients of whom 59% were females ($p<0.05$). The age of the subjects ranged from 2 weeks to 49 years of which 83.3% were below 12 years. The cleft was limited to the soft palate in 125 patients. A total of ninety one subjects (56.2%) had other associated clinical manifestations. There were fifteen (9.3%) subjects with congenital heart defects including eight subjects with atrial septal defects (ASD),

three subjects with ventricular septal defects (VSD) and one subject with the tetralogy of Fallot (TOF). Conclusion The findings of this study shows the association of cardiac and other clinical manifestations and need of genetic evaluation of patients with cleft palate.

OP 028

SCHOOL DENTAL SERVICE PROVIDERS – SCHOOL DENTAL THERAPISTS, OF SRI LANKA

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Introduction: The school dental service was introduced in 1951 and the dental auxiliary group of School Dental Therapists (SDT) provided this service in Sri Lanka. SDTs were based in school dental clinics and were engaged mainly in preventive dentistry. As at December 2012, approximately 400 SDTs catered for the needs of school children under 13 years of age. Objective- To analyse the profile of the SDT this is important to ascertain their training needs and dental manpower planning. Methodology- A pretested postal questionnaire was used to collect data from all SDTs employed by the department of Health as at December 2012. Results- Response rate for the postal questionnaire was 63%. SDTs were scattered throughout the country. Ninety percent of the clinics were supervised by the Regional Dental Surgeon (RDS) on a monthly basis. Ninety five percent of the SDTs took part in out- research programmes while all SDTs but the batch that qualified in 2012, practised extraction of deciduous teeth. Ninety seven of clinics had water and electricity supply. Availability of dental materials was limited to temporary restorative material, Silver alloy & mercury and Glass Inomer cement. All SDTs used disposable gloves and all clinics had a permanent assistant while 78% had followed an in-service training programme during the past 12 months. Ninety eight percent of SDTs were satisfied with their job. Conclusion- School Dental Services manned by SDT were in operation throughout the country. They provided a limited service comparable to their training under the supervision of RDS. All SDTs were satisfied with job.

OP 029

A PRELIMINARY STUDY OF THE JUGULAR FORAMEN AND ITS VARIATIONS IN ADULT SRI LANKAN HUMAN SKULLS

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Introduction: The jugular foramen is an important bony aperture in the base of the skull. The internal jugular vein, hypoglossal, accessory and vagus nerves exit through the foramen. Wide ethnic variations in the size, relations and bridging bony tissue in the foramen have been reported. Objective: To describe the morphometry and anatomical variations of the jugular foramen in Sri Lankan skulls. Materials and methods: The jugular foramina of 24 dried adult human skulls were studied, for its number, maximum diameter (using a standard vernier caliper {minimum reading 0.1mm}) and dome formed by the jugular bulb. Photographs were taken and student t test was used for the analysis. Results: The jugular foramen was present bilaterally in all skulls studied. The mean medial- lateral diameter of the foramen was 16.94 ± 2.74 mm) on right side and 16.23 ± 2.76 mm) on left side. At least one jugular bulb was present in 87.5% of the skulls. It was present only on the right side in 37.5% and only on the left side in 25% of the skulls. In 12.5% of the skull no dome was present. Conclusion: variations observed in this preliminary study are within the constraints of smaller sample size to conclude morphometric data of the jugular foramen for Sri Lankans. Therefore, further studies are needed to establish national reference values.

OP030

LOCAL-ADMINISTRATION OF LPS ON CALVARIAE CAUSE DELAYED EFFECT ON BONE-MINERAL DENSITY IN LONG BONES OF MICE.

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Lipopolysaccharide (LPS) is a profound bone-resorption mediator in chronic infections such as periodontitis. LPS-induced bone-resorption is by activating bone marrow macrophages to secrete cytokines, predominantly tumour necrosis factor-□ (TNF-□) and activation of nuclear factor-□B (NF-□B) in osteoclasts. A recent report shows that the LPS-induced production of TNF-□ in turn increases synthesis of a deubiquitinating protease, A20, capable of degrading TRAF-6, an adaptor upstream of NF-□B thus inhibiting bone-resorption in-vitro, suggesting that LPS might exert anti-resorptiove activity through A20. Objective: We hypothesized that LPS might have delayed anti-resorptive effects in-vivo hence the present study was carried out to examine the effect of LPS on bone-mineral-density (BMD) of calvariae and long bones after a single LPS injection. Methods: Mice were injected with 10 mg /kg of LPS or vehicle subcutaneously into the calvariae under anesthesia. Serum was collected on day 7, 10 and 25 to check the levels of TNF-□. Results: Gradual increase in serum TNF-□ peaking at day 10 was observed whereas it was not detected by day 25. Coinciding with the serum levels significant decrease in calvarial BMD was observed on day 7 and day 10 by dual-energy-X-ray-absorptiometry (DXA) after LPS injections whereas no significant change was observed on day 25. Significant increase in BMD of trabecular bone in tibial metaphysis was observed on day 25, by peripheral-quantitative-computed-tomography (pQCT). The microCT reconstructed images confirmed the above DXA and pQCT data. Conclusion: These data indicates that a single injection of LPS exerts delayed effect on BMD of long bones.

OP031

LOCALIZATION OF PORPHYROMONAS GINGIVALIS AND TANNERELLA FORSYTHIA IN GINGIVAL AND SUBGINGIVAL GRANULATION TISSUES USING NOVEL MONOCLONALANTIBODIES

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Background: A number of publications have reported an association between periodontopathic bacteria and atherosclerotic cardiovascular diseases. However none of these studies show clear histological evidence with detection of bacteria in the diseased gingival sites or the vascular sites. Therefore the objectives of our study were to develop monoclonal antibodies specific for Porphyromonas gingivalis and Tannerella forsythia and to investigate their localization. Material and Methods: The monoclonal antibodies (mAbs) were prepared following conventional method. The specificity and absence of cross reactivity were confirmed with western blot analysis and immunohistochemistry (IHC) using rat liver sections infected with 14 species of pathogenic and commensal bacteria. IHC was done using the produced novel mAbs to investigate the localization of these bacteria in 101 gingival/ subgingival tissues. Real-time PCR was done to confirm the IHC data. Results: Both mAbs gave positive reactions only with rat liver sections infected with respective bacterial species. Out of 101 samples P. gingivalis was located in 57 (56%) and T. forsythia in 76 (75%) in IHC. In real-time PCR P. gingivalis was detected in 67 (66%) and T. forsythia in 87 (86%). The correlation between the density of bacterial genomes and their respective IHC gradings were < 0.0001 for both the bacterial species. P. gingivalis was observed intracellularly in squamous epithelial cells in 12 (12%) and T. forsythia in 32 (31%). Immunofluorescence double staining with 3D imaging confirmed the intraepithelial existence of bacteria. Conclusion: The prepared novel mAbs could be used as specific and reliable tools to locate P. gingivalis and T. forsythia in human tissues.

OP032

FIBROBLASTS ARE IMPLICATED IN ARECA NUT-INDUCED CARCINOGENESIS VIA OXIDATIVE DNA DAMAGE AND NUCLEAR ANEUPLOIDY.

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Objectives: Molecular crosstalk between cancer cells and fibroblasts has been an emerging hot issue in understanding carcinogenesis. Oral Submucous Fibrosis (OSF) is an appropriate model for studying the role of fibroblasts in carcinogenesis. Therefore, this study aims to investigatethe role of fibroblasts in carcinogenesis, targeting the malignant transformation of OSF. Methods: For this study, normal human gingival fibroblasts (hNOF) and immortalized hNOF (hTERT-hNOF) were used.Cytokine antibody array was employed to screen cytokines secreted from fibroblasts exposed by Areca nut (AN). We found that the levels of GRO-α, IL-6, and IL-8 were increased inAN-treated fibroblasts and these results were confirmed by ELISA and immunocytochemistry. Immortalizedhuman oral keratinocytes (IHOK) were treated with these cytokines or conditioned media (CM) and assessed for reactive oxygen species (ROS) generation, oxidative DNA damage, DNA double strand breaks (DSB) and nuclear ploidy change. Results: These approaches showed thatROS-generating cells were 7 or 8-fold higher in cytokine-treated IHOK compared to non-treated IHOK. The positive cells showing DNA DSB and 8-oxoG FITC conjugateincreased after treatment with cytokines or CM and could be reduced by neutralizing cytokines or anti-oxidant treatment. Furthermore, the neucleararaneuploid cellswere 2-fold increased in cytokine-treated IHOK.OSF tissues also showed cytokine expression, oxidative DNA damageand DNA DSB. Conclusions:Taken together, we showed that the fibroblasts exposed toAN caused DNA damage in IHOK through cytokine release, suggesting a contributory mechanism to malignant transformationin OSF. This study provides insights to develop novel preventive modalities byinhibiting their routes of transformation.

OP33

INTRALESIONAL CORTICOSTEROIDS AS A TREATMENT FOR RESTRICTED MOUTH OPENING IN ORAL SUBMUCOUS FIBROSIS

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Background: Oral submucous fibrosis (OSMF) is a chronic debilitating disease of oral mucosa associated with an increased risk of malignancy and characterized by progressive reduction of mouth opening. Objectives: The aim of the study was to evaluate the effectiveness of intralesional corticosteroid injections as a treatment modality of OSMF.Materials and methods: Two hundred and thirty histologically confirmed OSMF patients were included in the study, out of which a group of 116 patients with a 30mm or less inter incisal mouth opening were subjected to intralesional injections of 40mg methyl prednisolone at monthly intervals for five consecutive months. The effect of the treatment was assessed by evaluating the degree of improvement in mouth opening. Results: The male to female ratio of OSMF patients was 3:1. Highest number of patients (34.5 %) were in the 31-40 years age group. Seventy six (65.5%) patients recorded a 30-21mm mouth opening at the pre interventional stage, 33 (28.5%) had 20 – 11mm, whilst 7 (6%) had only a 10mm or lesser degree. Meanwhile only 19.8% of the studied group was found to have restricted tongue movements. All patients included in the study had a history of chewing areca nut, and 38.3% had chewed areca nut for a period of more than 10 years. In paired comparison, statistically significant difference ($t = -8.78$, $df = 115$, $P < 0.001$) was observed in mouth opening over a period of 12 months, in the OSMF patients who had corticosteroid injections. Conclusion: The present study provides justification for the use of intralesional corticosteroids, in improving mouth opening, particularly in those patients with palpable fibrous bands.

OP34

PATIENT PROFILE AND THE MAIN ORTHODONTIC PROBLEMS PRESENTED AT A TERTIARY CARE GOVERNMENT INSTITUTION/HOSPITAL IN SRI LANKA.

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Introduction: In Sri Lanka, delivery of Orthodontic care in the Government sector (Department of Health) is limited to 17 hospitals/institutions manned by 18 consultant orthodontists. Hence treatment for Orthodontic needs is highly demanded in those institutions/hospitals, which is exemplified by the long waiting list- in some institutions exceeding more than 3 years. Objective In this backdrop it is important to understand the patient profile and the main orthodontic problems presenting at government institutions. This will help to plan orthodontic service delivery in government sector. Methodology: This study is a retrospective descriptive study done at a Consultant Orthodontic Unit at the Institute of Oral Health Maharagama. Four hundred patients, who came for orthodontic treatment from December 2012 to March 2013 were the study population. Their "patient records" were scrutinized to complete a pretested data collection sheet.Results- Vast majority (>90%) were self referred patients. Seventy percent of the patients were in the age group of 10-20 years. There were 48% and 52% male and female patients respectively. The main complaint was proclination of teeth (70%). Twenty three percent had para-functional habits. More than two thirds of the patients had Class II Division I malocclusion, while 21% had Class I malocclusion. Seventy five percent of the patients had class II skeletal base. Seventy two percent and 28% of the patients were placed in short and long waiting lists respectively, when patients were divided into two groups, according to the International Orthodontic Treatment Need Index and the availability of facilities. Conclusion- There is a high demand and self referral for orthodontic treatment from persons between 10 - 20 years of age. The main complaint was proclination of teeth while majority had Class II Division I malocclusion.

OP035

GENDER DIMORPHISM IN THE MAXILLARY FIRST MOLARS: A PRELIMINARY STUDY

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Introduction: Gender determination is a crucial step in establishing forensic human identification. In massive disasters where cranial bones are fragmented beyond recognition, morphometry of teeth provide excellent material for anthropological, genetic, odontologic and forensic investigations. Objective: The goal of the present study was to investigate the effectiveness of maxillary first molar dimensions in predicting gender in an adult Sri Lankan population. Materials & methods: A total of fifty one adult dry skulls (26 males and 25 females) were included in this study. The following parameters were recorded on both sides of the upper jaw using a sliding caliper capable of measuring to the nearest 0.01 mm: right and left maxillary first molar bucco-lingual diameter, inter molar arch width and combined width of maxillary incisors. Results: The bucco-lingual diameter of maxillary molar teeth (male: 11.45 ± 0.07; female: 10.51 ± 0.03), maxillary inter molar arch width (male: 47.00 ± 0.24; female: 46.12 ± 0.18) and combined width of maxillary incisors (male: 32.04 ± 0.18; female: 30.06 ± 0.16) were statistically significantly higher in males than in females ($p<0.001$). The index of gender dimorphism for maxillary molar teeth was found to be 9%. Conclusion: This study provides normative morphometric data and establishes the existence of a significant gender dimorphism in the maxillary first molars in an adult Sri Lankan population. This data will be of immense use for medico-legal investigators and dental practitioners as ethnicity, culture and environment are known to influence tooth morphology.

OP036
CONTRIBUTORY CAUSES, TYPES AND PSYCHOSOCIAL IMPACT OF TRUAMATIC DENTAL INJURIES AMONG CARE SEEKERS AT RESTORATIVE CONSULANT UNIT, TEACHING HOSPITAL, KARAPITIYA

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Background: Traumatic dental injuries are widespread, however, early presentation to dental care is of paramount importance in ensuring better outcomes but often neglected by people due to lack of awareness and difficulties in accessing care. Moreover, managing traumatic dental injuries constitute an important component of care services provided by Restorative Consultant Units. Hence, detailed understanding of traumatic dental injuries and associated factors is important in planning public dental care services. Aims: To describe the socio-demographic profile, distribution of types and contributory causes of care-seekers with traumatic dental injuries attended Restorative Consultant Unit, Teaching Hospital Karapitiya. To explore the duration from occurrence of traumatic dental injury to care seeking among attendees to describe the psycho-social impact of traumatic dental injuries among attendees. Method: The sample consisted of 145 attendees to the Rstorative Consultant Unit, Teaching Hospital Karapitiya for traumatic dental injuries between January to August 2012. The data were extracted from routine clinical records and pre-tested, validated interviewer administered questionnaire. Data were analyses using SPSS-14 statistical package. Results: The overwhelming majority of care seekers were male school boys. Falls was the most common contributory cause for dental trauma followed by accidents as reported by (53.1%) and (25.5%) of respondents respectively. Only 9% had presented on the same day of the occurrence of the injury and almost half 55.2% presented within one month. 48.3% of trauma consisted of enamel and dentine fractures in maxillary incisors. The most commonly reported psycho-social impacts were difficulty in chewing food (34.5%), feeling embarrassed (32.4%), pain in teeth (33.1%) and avoidance of smiling (31.0%). Conclusion: It is important to conduct school based awareness programmes on prevention, control and early seeking of dental care for traumatic dental injuries. As the commonly affected teeth are maxillary incisors with important psycho-social impacts for the life of young school children facilities should be improved in Restorative Consultant Units to provide quality care for the affected.

OP037
A CASE OF PLUNGING RANULA

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Ranula is a term used for mucoceles that occur in the floor of the mouth. An unusal clinical variant, the plunging ranula, occurs when the spilled mucin dissects through the mylohyoid muscle and produces swelling within the neck. If no lesion is produced in the mouth, the clinical diagnosis of ranula may not be suspected.Rarely ranula extends through fascial spaces in the neck. It is Usually a clinical diagnosis and removal of the sublingual gland itself results in cure(Whitlock & Summergill,1962). We report a case of plunging Ranula. A 55 years old male patient presented with a R/S painless diffuse submandibular swelling for one year duration. Intra-oral examination reveals a blue,dome-shaped,fluctuant swelling in the same side floor of the mouth as well. Aspiration revals mucin content.Ultra sound scan confirmed the diagnosis of plunging ranula.

OP038

THROMBOCYTOPENIA – AN INCIDENTAL FINDING AT THE DENTAL CLINIC? REPORT OF TWO CASES.

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General Hospiatl, Kalutara

Patients with post extraction bleeding are not an uncommon presentation to the dental clinic. Majority of these patients do not have any underlying bleeding disorder and respond well to the local measures such as application of pressure and suturing the bleeding socket and do not warrant further investigations. We present two cases who presented recently at OMF unit, General Hospital, Kalutara. Case I A 23 years old male presented with post extraction bleeding. His haemoglobin value was 7.2g /dl and platelet count was 4000 /µl. He was further investigated and bone marrow aspiration biopsy confirmed the diagnosis of Acute myelofibrosis. Case II A 3 year old girl presented with a laceration to her left side buccal mucosa, following an accidental fall four days ago. She was having multiple purpuric patches on her limbs and trunk. Her platelet count was 5000 /µl, and was suspected of having ITP secondary to a viral infection. Although the prevalence is rare, patients with rare systemic disorders can present to the dental clinic. We all should be vigilant to identify those cases and manage accordingly to overcome possible disasters.

OP040

A STUDY ON EPIDEMIOLOGY AND TREATMENT MODALITIES OF FACIAL BONE FRACTURES IN 60 PATIENTS AT GENERAL HOSPITAL-KALUTARA.

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Injuries to the facial region are clinically highly significant due to its importance in one's appearance, involvement in vital functions like vision, smell, hearing, speech and mastication, protective role to the brain and the high economic impact. The etiology and pattern of facial bone fractures vary from country to country and from region to region within the same country. The social, economic and cultural factors and legislations all may contribute to this variation. Classification of fractures according to the anatomical site may have a basis in treatments, but consideration of etiology may be more important in preventive strategies. We analyzed the age, gender, etiology, pattern of facial bone fractures and the mode of treatment they underwent in 60 patients presented to the oral and maxillofacial surgery unit, General Hospital-Kalutara during the period of 15-01-2013 to 15-03-2013. Dento alveolar fractures and trauma to teeth were not included in our study. We found that majority of victims were males and the main cause of facial bone fractures was road traffic accidents followed by interpersonal violence. The commonest site for fracturing was zygomatic complex and a significant number of fractures were minimally displaced that they could be managed conservatively.

OP041

PROSTATIC ADENOCARCINOMA WITH MANDIBULAR METASTATIC LESION

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Metastatic lesions comprise almost 1 % of different types of oral malignancies. Malignancies of the breast, lung, colorectum, renal and supra renal glands, thyroid, testis and prostate glands are the commonest primary foci of metastases in adults. These lesions can affect either bones or soft tissues in the maxillofacial region. Whenever the maxillofacial area is affected, the most common location is in the molar region of the mandible. This paper reports a case of a 79-year-old patient presented with a cystic lesion of left mandible which revealed as adenocarcinoma that occurred as a remote metastasis of prostate gland cancer. Radiological and biochemical investigations suggestive of generalized bony metastasis. Surgery was not performed and patient is on palliative treatments.

OP043
IMPLANT COMPLICATIONS

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Dentists will be able to learn the cause of the most common complications , avoid them and how to treat them. 1. During surgery complications. 2. Early post operative complications. 3. Late post operative complications.

OP044
STUDY OF TRAUMATIC AVULSION OF PERMANENT TEETH, AT DENTAL INSTITUTE, COLOMBO.

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Tooth avulsion or exarticulation implies complete displacement of a tooth out of its socket. The morbidity of avulsions is very poor in comparison to other traumatic dental injuries. The objective of this study was to establish the commonest age, sex and causes that lead to dental avulsions, to analyze the responses of adults/ the public on providing first aid at the time of a traumatic dental avulsion and to determine commonest post-traumatic complications from patients presenting to Restorative Unit B, Dental Institute, Colombo. Data were collected using a pretested questionnaire, which was administered and filled by the dental surgeon who managed the patients, and the answers were based on responses by the patients. Out of the patients who responded to the questionnaire, the commonest age of presentation was from 7 to 13 years, most frequently affected were males, commonly due to falls, most frequently affected tooth was the upper central incisor.

OP045
ORBITAL REPOSITIONING WITHOUT INTRACRANIAL APPROACH IN CORRECTION OF HYPERTELORISM

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Hypertelorism is a common clinical presentation that needs to be corrected with orbital repositioning. Generally it is done with combining an intra-cranial and extra-cranial approach. Due to this, surgery is complicated and requires a multi-disciplinary[neuro-surgery] approach. In addition to that it can cause serious intracranial complications. In our method we have used only an extra-cranial approach and both orbits were shifted medially with a "U" shaped osteotomy cut involving the inferior medial and lateral orbital rims leaving the superior orbital rim. This technique can reduce the surgical time and post operative complications, giving the same clinical results as the standard technique.

OP046
THE EFFICACY OF LEMONGRASS OIL MOUTHWASH AS PRE-PROCEDURAL RINSE IN ULTRASONIC SCALING

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AIM: To compare the efficacy of lemongrass oil and chlorhexidine mouthwash as a pre-Procedural mouthrinse in ultrasonic scaling. Materials And Method: Lemongrass oil mouthwash was prepared indigenously. The four mouthrinses used lemongrass oil 0.1%, 0.25%, 0.5% and chlorhexidine 0.2%. A total of 40 patients in the age group of 18-50 years were selected. A randomly assigned maxillary and mandibular quadrant of the same side received an ultrasonic scaling for a period of 15 minutes. The assistant stood at the back of the operator exposing a blood agar plate to the aerosol. The patient was asked

to rinse the mouth with 15 ml of assigned mouthrinse for 30 seconds twice. After 10 minutes, the same procedure was repeated on the remaining quadrants of another side with a new blood agar plate. The plates were incubated aerobically at 37°Cfor 48 hours and colony forming units of each type of bacteria were counted. RESULTS: The results showed that the percentage reduction of total number of colony-forming units was 81.61% (SD ±1.3662) with lemongrass oil mouthwash 0.1%, 86.98% (SD±1.1368) with 0.25%, 90.53 % (SD±2.0602) with 0.5%, and 90.72% (SD±2.5866) with chlorhexidine mouthwash (0.2%). CONCLUSION: 0.5% lemongrass oil mouth rinse reduced the bacterial aerosol similar to that of chlorhexidine0.2%. Lemongrass oil appears to be an alternative to chlorhexidine as a Pre-procedural rinse.

OP047

THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS (SES) AND ORAL CANCER: A LITERATURE REVIEW COMPARING THE DEVELOPED AND DEVELOPING WORLD

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Background: Oral cancer contributes as a significant component of the global burden of cancer globally. Although more than 50% of oral cancer cases in developing countries are detected at an advanced stage ,most of these cancers are preventable. This review created a global and regional comparison between socioeconomic status (SES), human development indices (HDI) and global patterns of incidence and mortality. Objectives: (1) To investigate the relationship between SES and oral cancer in both developed and developing countries of WHO regions; and (2) To examine the effects of social determinants of health (HDI), awareness and screening with respect to oral cancer risk in different countries. Methods: A literature search was conducted on MEDLINE and PUBMED, and relevant case studies were retrieved. Age-standardized incidence and mortality rates from GLOBOCAN 2008 data were compared to 2013 HDI quartiles across WHO regions, and then compared to the extracted case studies. Results: High-risk groups were found to be from the low SES. Modifiable risk factors for oral cancer were seen to be socioeconomically and culturally dependent. Area-based indicators did not follow the regional disease patterns. Health inequalities were seen to exist both between and within nations with respect to incidence, mortality, risk factors, awareness, screening, and the provision of care for oral cancer. The SES gradient was less pronounced, and survival rates were higher in developed countries, probably due to better awareness and more effective screening programs. Conclusion: Low SES may mediate modifiable risk factors, awareness, use of screening programs, and access to dental services, leading to oral cancer.

OP048

CHARACTERISTICS AND CLINICAL EFFECTS OF UNERUPTED SUPERNUMERARY TEETH: A RETROSPECTIVE STUDY

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Introduction: Supernumerary teeth are teeth in excess of the normal number. The reported prevalence ranges from 0.3% - 0.8% in the primary dentition and 0.1% - 3.8% in the permanent dentition. Supernumerary teeth may erupt or stay impacted. According to the published data approximately 25% of supernumerary teeth are erupted, while the rest (75%) are unerupted. AIM: The objective of this study was to investigate the characteristics of unerupted supernumerary teeth and their clinical effects in a sample of children who attended to the Division of Paedodontics, Faculty of Dental Sciences, University of Peradeniya. The sample comprised 58 unerupted supernumerary teeth of 49 children. Results: Out of 49 patients, 36 (73.5%) were male and 13 (26.5%) were female; the male to female ratio (2.77: 1). Most of the subjects presented in the early mixed dentition. Supernumerary teeth were frequently found in the premaxillary region (98%), 95% CI (90.8-99.9), and majority of the subjects (81.6%) had only one

unerupted supernumerary tooth. Supernumeraries appear in a variety of shapes and the commonest impacted supernumerary tooth in this study was conical shaped (63.8%). Delayed eruption of the permanent teeth (47%) was identified as the commonest clinical effect and there was a statistically significant difference between effect of delayed eruption by conical as opposed to tuberculate teeth (P value < 0.05) The characteristics and the clinical effects of unerupted supernumerary teeth seen in this study mostly followed the published literature.

OP 049

PRELIMINARY STUDY ON DEMOGRAPHIC AND CLINICAL ASPECTS OF ORAL LICHEN PLANUS AND LICHENOID REACTION IN A GROUP OF SRI LANKAN PATIENTS - A RETROSPECTIVE STUDY

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Introduction: Oral Lichen Planus (OLP) is a T cell mediated chronic inflammatory mucocutaneous disorder. Oral Lichenoid reactions which are considered varients of OLP, with definite identifiable aetiology. Aim: To assess the demographic and clinical aspects of Oral Lichen Planus and Lichenoid reactions. Materials and Methods: 170 patients with OLP and Lichenoid reactions who attended the Oral Medicine clinic, Dental hospital-Teaching, Peradeniya, during the period from December 2000 to December 2009 were included in the study. Retrospective analysis was performed on patients with OLP and Lichenoid reactions separately to study the demographic and clinical aspects. Descriptive statistical analysis done on data obtained from the records using Minitab 15 statistical analysis software. Results- Out of 170 patients 150 were diagnosed with OLP with an age range of 15 – 78 years (mean age 44.83SD + 13.29. Females outnumbered males (1.88: 1). Twenty OLP patients had skin lesions (13.33%). Six clinical subtypes were identified and commonest was reticular (57.33 %). There were 15 different areas affected by OLP. Buccal mucosa (49.91 %) was the commonest. Mean follow up period was 32.51 months (SD + 37.7). Malignant transformation was not observed. 53 patients were identified to have symptomatic OLP types. Patients with erosive, ulcerative and bullous types had burning sensation. They were followed up (mean 40.42 months SD + 42.09) and 27 cases (50.94 %) had burning sensation as their last follow up visit. And also 12 cases had no lesions at their last follow up visit (22.64 %). Twenty patients were diagnosed to have Lichenoid reactions with a mean age of 52.40 (SD + 12.89). Antihypertensive drugs, Anti diabetes drugs and Amalgam restorations were the commonest causes. Conclusion- Age and gender distribution of the present sample resembles that of the other studies. Reticular type was found to be the commonets type and buccal mucosa was identified as the commonest site of affliction.

PP001

EFFECTIVENESS OF ADJUNCTIVE ORAL GELS AND MOUTH RINSES, COMMERCIALLY AVAILABLE IN SRI LANKA IN CONTROLLING PLAQUE AND GINGIVAL INFLAMMATION

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Gingivitis is the most prevalent chronic inflammatory condition among Sri Lankans. The primary aetiology is bacterial plaque, which can initiate destruction of the gingival and periodontal tissues. As gingivitis is a reversible condition, management is primarily aimed in reducing etiologic factors to reduce/eliminate inflammation. Periodontal maintenance care, both personal and professional is important in preventing re-initiation of inflammation. According to the literature, chemical agents help to improve plaque control and to reduce gingivitis even though mechanical plaque control is the mainstay in achieving these. Objective: To compare the effectiveness of some mouth-rinses and tooth-pastes/gels which contain chemical agents in reducing plaque and bleeding Materials and methods: The materials supplied by the CIC, Platinum Pharmaceuticals namely, Clinica and Enziclor mouth-rinses, Clinica and Hi-paradent oral-gels and Hi-salz tooth-paste were compared with three separate control groups. Forty-eight patients who attended the Periodontology clinic, FDS were randomly selected after a periodontal screening, which confirmed the presence of chronic moderate-severe gingivitis. Initial plaque score (PS) and bleeding score (BS) were assessed. All the patients received oral hygiene instructions with Modified Bass tooth brushing technique. Test groups were introduced a mouth-rinse/tooth-paste/ gel for twice daily use for one week in addition to the normal dentifrice they were using with the tooth brush twice daily. After 7-10 days, PS and BS were re-assessed. Result: There were statistically significant reductions in PS and BS at 95% confidence interval in all the patients (test and control) between two visits, according to Chi-squared test. However, the reductions in PS and BS were not significantly different (statistically), between the test and the control groups. Conclusion: Proper oral hygiene practice with twice-daily systematic tooth brushing with a dentifrice with or without chemical adjuncts such as the mouth-rinses and oral-gels used in this study would be beneficial in reducing plaque and gingival inflammation.

PP002

DIFFERENTIATION OF ORAL CANDIDA DUBLINIENSIS FROM CANDIDA ALBICANS BY EARLY D-XYLOSE ASSIMILATION

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Objective:C. dubliniensis is closely related to C. albicans in evolutionary terms, sharing its properties of commensalism and causing opportunistic infections. Previous reports have indicated that assimilation patterns for D-xylose (XYL), □-methyl-D-glucoside (MDG) and/or trehalose (TRE) may be useful for the phenotypic differentiation of these two speciesafter 72 h of incubation. It was of interest, therefore, to determine if XYL, MDG and/or TRE assimilation could be used reliably as a rapid test to differentiateC. dubliniensis from C. albicans at an earlier time point, rather than requiring 72 h to determine the outcome. Therefore, the main aim of this study was to determine the time course of XYL, MDG and TRE assimilation beginning as early as 2 h after inoculation of the isolates into the API 20C AUX yeast identification system, which includes these carbohydrates as part of its biochemical test profile. Materials and Methods: Forty isolates of C. albicans and C. dubliniensis obtained from the oral cavity belonging to two different geographic locale (Kuwait and Sri Lanka) were used.Isolates were inoculated into the API 20C AUX yeast identification system, and incubated at 30oC. XYL, MDG and TRE assimilations were read at 2 h intervals beginning 2 h after the initial inoculation and up to 24 h of incubation; thereafter, results were read after 48 and 72 h. Results: 97.5 % of C. albicansisolates (39 of 40) had assimilated XYL at 16 h and, by 24 h, all C. albicans isolates were positive for XYL assimilation. In contrast, none of the C. dubliniensis isolates assimilated XYL at any time point studied. An examination of MDG assimilation revealed that 24, 40, 92 and 100% of C. albicans isolates became positive after 16, 24, 48 and 72 h of

incubation, respectively, whereas only one C. dubliniensis isolate (2.5 %) assimilated □-MDG after 72 h. TRE assimilation was not helpful in differentiating these two Candida species at any time point studied. Conclusions: The foregoing data indicate that it is possible to differentiate the large majority (97.5%) of C. albicans and C. dubliniensis isolates in the API 20C AUX carbohydrate assimilation kit after as little as 16 h of incubation, and 100% of isolates by 24 h of incubation, based on the XYL assimilation patterns of these two species.

PP003

THE MOUTH IN HIV/AIDS: ARE THEY MARKERS OF DISEASE STATUS AND THE DISEASE PROGRESSION??

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HIV-related oral conditions occur in a large proportion of patients, and frequently are misdiagnosed or inadequately treated. Oral lesions are an important component of the spectrum of disease seen in HIV infection. There are almost forty different lesions reported in association with HIV disease. Presence of any of these lesions may be an early diagnostic indicator of HIV infection and are also indicators of the disease's progression. Many HIV-associated oral disorders occur early in HIV infection, not infrequently as the presenting sign or symptom. Thus, early detection of associated oral disease should, in many cases, result in earlier diagnosis of HIV infection. Likewise, awareness of the variety of oral disorders which can develop throughout the course of HIV infection is needed for better coordination of health care services between the treating physician and the dentist. Dental expertise is necessary for appropriate diagnosis and management of oral manifestations of HIV infection/AIDS. Oral lesions cause much distress and the diagnosis and management of these is the responsibility of our profession. Common or notable HIV-related oral conditions include xerostomia, candidiasis, oral hairy leukoplakia, periodontal diseases such as linear gingival erythema and necrotizing ulcerative periodontitis, Kaposi's sarcoma, human papilloma virus-associated warts, and ulcerative conditions including herpes simplex virus lesions, recurrent aphthous ulcers, and neutropenic ulcers. This presentation will summarize on oral manifestations of HIV disease. Oral disease is frequently associated with HIV. This paper reviews the clinical, diagnostic and therapeutic aspects of HIV-associated oral disorders. Key Words: HIV, oral manifestations, oral disease.

PP004

PLATELET RICH FIBRIN (P.R.F) IN RECONSTRUCTIVE ENDODONTICS

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This poster depicts the use of platelet rich fibrin in endodontics. PRF is a regenerative mix, easy to obtain, form of platelet, less costly. It is a matrix of autologous fibrin in which are embedded a large quantity of platelet and leucocyte cytokines. PRF is a second generation platelet concentrate which accelerate soft and hard tissue healing. Combination of MTA and PRF membrane as a matrix can prove to be effective alternative for creating artificial root end barrier. PRF avoids extrusion of the material into periodontal tissues, reduces leakage of sealing material and provides postoperative protection of surgical site and promotes bone growth, wound sealing and hemostasis. Placing PRF membrane is a thoughtful combination of many aspects, manipulative skills to implement and has necessitated expanding the subject of endodontics.

PP005

PERIOESTHETICS: THE WHITE AND PINK RATIO

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Esthetic dentistry is a rapidly evolving norm of clinical dentistry today aimed at establishing harmonious

dental esthetics. It's a very challenging avenue with immense scope and excellent results. Esthetic dentistry is growing in leaps and bounds and touching avenues with each passing day. The periodontal aspect in esthetics is extremely essential as any esthetic procedure is incomplete unless complemented by a sound healthy periodontium striking right balance between the white and the pink. There is also the dire need for understanding the various periodontal procedures in obtaining the balance. This poster aims at outlining various techniques to help cliinicians obtain optimal esthetic results.

PP006

FULL MOUTH REHABILITATION OF A PATIENT WITH SEVERE GENERALIZED TOOTH WEAR

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'Tooth wear', is a general term that describes surface loss of dental hard tissue, by processes other than caries, trauma or developmental disorders. It is physiological and cumulative. However, it is considered pathological, when it is extensive to the extent that, it is associated with functional or aesthetic concerns, symptoms of pain and discomfort, disproportionate for the age of the patient or when the rate of wear is of extreme concern to dentist or patient. It has a multifactorial aetiology, and is subdivided accordingly into erosion, abrasion, attrition and abfraction. However, there is a considerable overlap between aetiologies, as they affect in combinations, yet one type usually predominates. Clinically, the pattern of wear can bedescribed according to its distribution and severity. Clinical implications of tooth wear include aesthetic impairments, pain and other pulpal symptoms, reduced masticatory efficiency, unstable occlusion and temporo-mandibular joint disorders. Its management commences with measures taken to eliminate pain, eradicate aetiologies and to prevent further wear. Once the condition is stabilized, definitive restorations can be introduced to restore function and aesthetics. This clinical case describes the management of a 50-year-old male with severe generalised tooth wear.He was partially dentate with a completely deranged occlusion and multiple pulp involved teeth.The complexity of the dental problems demanded a 'full mouth rehabilitation'. He was initially provided with a 'Michigan' type splint for occlusal reorganization, and subsequently, a maxillary removable partial denture and numerous porcelain-fused to metal and cast metal crowns to establish a mutually protected occlusion.

PP008

KNOWLEDGE OF AND ATTITUDES TOWARDS HIV/AIDS: A COMPARISON BETWEEN A DENTAL STUDENT GROUP IN UAE AND STUDENTS IN SRI LANKA

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Objective: Investigations of the knowledge and attitudes of dental students in different settings pertaining to HIV/AIDS are limited. This study analyses the knowledge and the attitudes of students in an Emirate in UAE and Sri Lanka. Methods: 106 dental students (GMU) in the first four years of a six-year dental undergraduate program in UAE and 160 third and fourth year dental students in Sri Lanka (UP) were surveyed using a structured questionnaire. Results: The proportion of correct responses for knowledge and the proportion of responses of desirable attitudes towards HIV/AIDS among GMU and UP were compared using Z-test for two proportions. The knowledge about association with HIV/AIDS was higher among GMU compared to UP as regards oral Kaposi's sarcoma ($p<0.01$), herpes simplex ($p<0.01$), xerostomia ($p<0.05$) and Crohn's disease ($p<0.001$). The correct response rate of UP was significantly higher for knowledge about association with oral candidiasis ($P<0.001$), aggressive periodontitis ($p<0.05$) and necrotizing gingivitis ($p<0.05$). No statistically significant difference was observed for knowledge of association of HIV/AIDS and oral hairy leukoplakia, aphthous ulcers, non-Hodgkin's lymphoma, salivary gland enlargement and idiopathic thrombocytopenic purpura. GMU had significantly higher negative attitudes than UP: working with AIDS patients may influence choice of residency location (<0.001); would not share a chair/desk with AIDS patient (<0.001); had the right (<0.001) and would

refuse to treat an AIDS patient (<0.05); the infected should be isolated (<0.001); students with AIDS should have special schools (<0.001). Conclusion: Appropriate educational programs may alter the misconceptions and the negative attitudes of dental students.

PP009

CLINICAL LONGEVITY OF BAND AND LOOP COMPARED TO CROWN AND LOOP SPACE MAINTAINERS

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Objective: to prospectively investigate the success and survival rates of band and loop (B&L) compared to crown and loop (C&L) space maintainers cemented in the primary dentition. Methods: thirty six children were divided into two groups (18 B&Ls and 18 C&Ls) matched for age at cementation, gender and the extracted tooth. All clinical and laboratory procedures were performed by the same paediatric dentist and the same dental technician following the same protocol for all the cases. The fate of the appliances was categorized as failed or censored due to: 1.success, 2.lost to follow up during the study period or 3.end of the study. Results: a total of 16 girls and 20 boys (3.4-6.3 years old) were included. Over a period of 4 years, the overall failure rate was 53%. For B&Ls, the failure rate was 83% compared to 22% for C&Ls. The main reason for failure of B&Ls was decementation (87 %), while for C&Ls it was solder breakage (75%). The mean survival time for B&Ls was 18.8 months and for C&L it was 40.4 months ($p<0.00002$). Conclusions: the failure rate and mean survival time of C&Ls was clinically and statistically significantly better than for B&Ls. It is recommended that in the primary dentition, where a space maintainer is expected to function for a long period of time, preference is given to C&L space maintainers.

PP012

NANOROBOTS: BECAUSE GREATNESS DOES NOT COME FROM SIZE

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Nanorobotics is an exciting futuristic technology emerging in the field of Dentistry. Nanorobots are controllable machines at the nano(10^-9)meter scale which could potentially revolutionize current treatment modalities; the induction of local anesthesia, producing a permanent cure for dentin hypersensitivity, orthodontic tooth re-positioning within minutes to hours, and continuous oral health maintenance using mechanical dentifrobots. This article attempts to illustrate the potentially far-reaching impacts of these nanorobots on clinical practice, as well as highlighting the safety issues associated with the application of this emerging technology. These controllable nano structures are designed to use specific motility mechanisms to precisely navigate their path within human tissue and execute preprogrammed or transmitted orders to achieve the desired results. Although the development and application of nanorobotic technology still faces many challenges, the rapidly progressing investigations will ensure that developments that seem unbelievable today are possible in the future.

PP013

OCCUPATIONAL HAZARDS IN DENTISTRY

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A healthy dentist is one of the most important components in a successful dental practice. The dentist is a subject to a wide variety of physical and psychological ailments that are induced or aggravated by the work environment and they greatly affect the health of dental professionals. In different countries dentists reported having poor general health and suffer from various health related problems. The aim of our poster is to summarize and ascertain dental practice-related disorders influencing the physical and psychological health of practitioner. Also we would like to highlight the most vulnerable systems of the dental

professional and to survey the best methods to overcome these ailments.

PP014

MANAGEMENT OF IMPACTED MAXILLARY CANINE – TWO CASE REPORTS.

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The permanent canines are the foundation of an esthetic smile and functional occlusion. Factors that interfere with its development and eruption had serious consequences on esthetics, function and stability of stomatognathic system. Impacted canines are those with a delayed eruption time or that are not expected to erupt completely based on clinical and radiographic assessment. Management of the impacted canine is one of the greatest challenge for orthodontist. Success of the treatment depends upon patient cooperation, age of patient, proper diagnosis, level of canine impaction, inclination and depth of impaction, amount of root formation, type of exposure of tooth, amount of bone removal, type of attachment and method of orthodontic traction. All these parameter plays important role when managing impacted canines to achieve good canine alignment in the arch with canine guided occlusion, gingival level, and integrity of periodontium. This poster briefly presents the etiology, diagnosis and management modalities along with two case reports.

PP015

FABRICATION OF AURICULAR PROSTHESIS - A CASE REPORT

Nayana Prabhu
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The fabrication of ear prosthesis is considered by many prosthetists to be one of the most difficult replacements in maxillofacial reconstruction. The severe undercuts and pronounced convolutions of the ear's surface present a challenge in simulating a natural proportioned prosthesis. Absence of all or part of the external ear may be either aquired (surgical resection or trauma) or congenital (microtia with hemifacialmicrosomia). To make an informed choice between autogenous surgical reconstruction and wearing a prosthetic ear retained by implants or skin contact adhesives, the patient should receive guidance and advice from an expert team committed to optimal care.At present, a satisfactory solution may be achieved with the fabrication of a prosthetic ear that copies the normal contralateral ear. With congenital defects such as microtia, where often 1 ear is missing, existing facial asymmetry presents difficulty in determinig the size and location of an artificial ear that will maintain facial harmony. However, the success of the prosthesis depends upon the maxillofacial technician's artistry and ability to copy the normal contralateral ear. This is achieved using anthropometric measurements and visual assessment. This Poster will present an outlined procedure in the basic fabrication of a prosthetic ear by a conventional technique where the wax pattern is fabricated from the impression of an individual with a similarly proportioned ear.

PP017

KEY FOR PROSPEROUS AESTHETICS IN IMPLANT PROSTODONTICS

Puneeth Hegde*,
Manipal College of Dental Sciences, Mangalore, India

With excellent success rate of the implant supported prosthesis in restoration of the partially or completely edentulous ridges there has been increasing appreciation for implant esthetics while maintaining tissue health and implant survival. Though most often the implants are being placed in the esthetic zone, the placement of dental implants in the anterior maxillary and mandibular regions are a challenge due to high esthetic demand and difficult pre-existing anatomy. A successful esthetic result by dental implant

placement in the esthetic zone requires knowledge of various concepts and techniques. Careful preoperative treatment planning, augmentation of hard & soft tissues, and special attention to the details of surgical & prosthetic techniques are areas that must be addressed during treatment planning. The techniques necessary to create an ideal preoperative site are atraumatic extractions, formation of papillae with ovate pontics, bone grafting with membranes and connective tissue grafting. An understanding of the principles for maintaining a healthy biological width is also necessary. Once the ideal site for implant placement has been created, knowledge of abutment selection, occlusal forces related to progressive loading and occlusal forces on the final restoration need to be assessed. This poster will explore these concepts, which allow for ideal esthetics with dental implant.

PP018
STEM CELLS AND THEIR USE IN DENTISTRY
Anuththara Lokubandara and Emma D'Souza

Background: Tooth and bone loss depletes function and psychological well being. Dentures, implants and conventional drilling and filling methods can resolve those issues; however each has its own disadvantage. The teeth and face harbor stem cells, just like all other regions of the body. However, stem cells from the teeth and face have special properties which make them unique. These stem cells can be isolated from exfoliated deciduous teeth, dental pulp, dental follicle and dental papilla. Objective: Dental stem cells are poised to significantly impact treatments that range from dental implants to reconstructive surgery, as researchers have been able to regrow both teeth and jawbone. Result: Dental stem cells demonstrate tremendous promise in advancing the field of regenerative medicine, which continues to make important strides in addressing degenerative conditions, congenital anomalies, trauma and organ replacements. Conclusion: This recent progress in stem cell research may facilitate the development of alternatives for current materials and therapies used to treat tissue loss, reconstruct dentoalveolar and craniofacial bone defects, and eventually replace an entire tooth. Recent gains in the understanding of molecular regulation of tooth morphogenesis, stem cell biology and biotechnology offers the opportunity to realize this goal.

PP019
BACTERIA: NOT SO BAD AFTER ALL
Rohini Bonthala* , Janita Shah, Sridhar. N
Manipal college of dental sciences, Manipal, India

The concept of bacteriotherapy (administration of useful bacteria to replace harmful ones) to heal diseases and support immune function was first brought to light in the 20th century. The main field of research has been in the gastrointestinal tract; however, probiotic approach has shown promising results in oral cavity with respect to chronic diseases such as dental caries, periodontitis and recurring problems such as halitosis and candidiasis. The aim of this review is to identify the various potential probiotic bacteria in the oral cavity and how they may aid in improving oral health. Dairy products have been the primary method of delivering Lactobacillus and Bifidobacterium to improve oral health. Recently, chewing gums and lozenges have shown to be a more effective mode of delivering probiotics to the oral cavity. The current in vitro findings on the potential use of probiotics in improving oral conditions are very encouraging, though the exact molecular mechanism of their action is still unclear and the dosage of probiotic administration in each indication still needs to be defined. Therefore, probiotics cannot yet be prescribed to patients with oral health diseases until more randomized clinical trials have been performed and a set protocol be established.

PP020

EFFECT OF GREEN TEA CONTAINING TOOTH PASTE ON PERIODONTAL INFLAMMATION - A CLINICAL AND BIOCHEMICAL PILOT STUDY

Hrishi TS
Dept. of Periodontology

Manipal College of Dental Sciences, Manipal, IndiaGreen tea or Camellia sinensis is a common beverage consumed in many countries. Numerous health benefits of green tea consumption have been reported like anti carcinogenic activity, anti-inflammatory activity, alleviation of cardiac diseases etc. Principle contents of green tea are polyphenolic catechins, in particular epigallocatechin gallate (EGCG) and epicatechin gallate which are potent antioxidants. Emerging evidences suggest the benefits of green tea in periodontal disease if consumed systemically or applied locally by virtue of its antibacterial and anti-inflammatory properties Aims & Objectives To determine the effect of indigenously prepared green tea dentifrice on clinical and biological parameters of periodontal inflammation Materials And Methods 22 Patients having mild periodontitis with at least 4 sites of probing depth >4mm <6mm were included in the study .Scaling and root planing were performed on all patients and patients were randomly assigned to use indigenously prepared green tea dentifrice(Test group) or commercially available non fluoridated tooth paste (control group), 11 in each group.Clinical parameters like plaque index, gingival index and bleeding index were recorded on base line and after one month.GCF samples were collected on baseline and after one month for determining total antioxidant activity by ferric reducing antioxidant power assay [FRAP]. Results & Conclusions Both groups showed improvement in clinical parameters and antioxidant levels Patient acceptability with green tea tooth paste was good, suggesting that green tea can be supplemented in to dentifrice because of its antibacterial and anti-inflammatory properties

PP021

EFFICACY OF LEMONGRASS OIL MOUTHWASH AS AN ANTIPLAQUE AGENT –AN IN-VITRO STUDY

K Meena Anand*, Ruchika Goyal, G Subraya Bhat

Aim and objectives: Dental plaque is aetiologic factor in gingival and periodontal disease. Considering the uses of lemongrass oil, the aim of the present study was to find out the antiplaque property of lemongrass oil mouthwash in - vitro. Materials and methods: Pooled saliva was collected in a sterile container with the polymethymethacrylate strips (1cm breadth X 4.5cm height) which were cut into the size of the slot of the spectrophotometer was kept in the containers, and was incubated in the incubator at 37degree centigrade for 48 hours. The strips were stained with erythrosine for 30seconds and rinsed in water and kept in the slot of spectrophotometer and value was recorded. The same procedure was done for 10 strips to rule out the bias. The second ten strips were taken stained, rinsed with water, rinsed with the lemongrass oil mouthwash 0.25% with alcohol, rinsed, stained with erythrosine, rinsed with water and readings were taken from the spectrophotometer. The same procedure was done for lemongrass oil mouthwash 0.5% with alcohol, lemongrass oil mouthwash 0.25% and 0.5% without alcohol and chlorhexidine mouthwash, with and without alcohol. Results: The results showed that the lemongrass oil mouthwash at both the concentration showed reduction in the plaque better than that of chlorhexidine. Conclusion: The present study concluded that the lemongrass oil mouthwash can be used as an adjunct to mechanical oral hygiene. Explanation for the quire: The essential oil of lemon grass consists mainly of citral. Citral is a mixture of two stereoisomericmonterpene aldehydes; in lemon grass oil, the trans isomer geranial and isomer neral (25 to 38%). Further terpenoids in lemon grass oil are nerol, limonene, linalool and β-caryphyllene. Citral has been reported to be sensitize and irritant by Allenbey et al 1993 and Heydorn S et al 2003. However, Opdyke DL J 1976 said that essential oil that contain significant amount of each material do not induce sensitization. There is no literature stating lemongrass oil mouthwash harmful effects on the oral tissues. The concentration of lemongrass oil that is used in the present study is very minimal that is 0.25 % and 0.5% v/v which might not induce any adverse effect.

PP022

ADENOMATOID ODONTOGENIC TUMOR: REPORT OF MULTIPLE CASES

L Pradhan*BP Koirala
Institute of health Sciences, M R Jaisani, A Sagtani

We present five different cases of Adenomatoid Odontogenic Tumour (AOT), four in maxilla and one in mandible. All the reported cases occurred in a young age group (14 to 30 years), with a female male ratio of 3:2. Two cases occurring in anterior region of maxilla were associated with an impacted left canine and were clinically diagnosed as Dentigerous cyst. The third case in anterior maxilla did not involve an impacted tooth but was associated with the periapial region of canine and premolars and was suggestive of a Radicular cyst radiographically. The fourth case in maxilla and the one in mandible had aggressive features causing facial disfigurement. They involved the posterior regions of the corresponding jaw and were not associated with impacted teeth. Clinically, these cases were suggestive of the most common jaw tumor i.e. Ameloblastoma. However, postoperative histopathology reports revealed AOT.Conclusion- Adenomatoid Odontogenic Tumor should be considered in the differential diagnosis of expansile radiolucent jaw swellings although its incidence is low.

PP025

DENTISTS' PAIN,ERGONOMICS FOR DENTAL SURGEONS

Chandana Gajanayake.
D/Director Institute of Oral Health

Background: A dental surgeon has applied for two days leave. His doctor has adviced him to rest for two days as a treatment for the back ache. The head of the instituttion initially did not believe that, but officially accepted the reasonning. Later he discussed the matter with some heads of institutions of the same district. There he found that complain of back pain is not uncommon among dental surgeons. Aim- To find the common sites of pain encountered by dental surgeons. And the aggravating and the diminishing factors of pain. Justification- The value of the lost hours as a result of leave or suboptimal performance by a dental surgeon is very high. If this is a result of his/her duty as a Dental Surgeon it demands attention to the matter. Method- Indepth interviews were conducted with 13 selected dental surgeons. They were asked whether they had any musculoskeletal pain (back, neck, shoulder or arm) or headache during the past four weeks. Then they were encouraged to describe the pain, its frequency, severity, aggravating and diminishing factors and what remady they did for the pain. They were encouraged to talk freely and the interference was kept to a minimal level and done only at a time it was essential. Results- All the dental surgeons(13) interviewed had either a musculoskeletal pain or headachae during the past four weeks(100%). However the number of episodes of pain was 25. Most common type of pain was back pain (61.5%).Usual treatments were rest and/or self administered analgesics. All 13 of them had tried self medication (100%). Only one dental surgeon(7.7%) has seeked medical advice and the recommended treatment was rest and analgesics. Conclusions- Number of working ours and the working condition is related to the pain, it's severity and frequenzy. More research in this area is needed.

PP026

EFFECTIVE USE OF FLUORIDE TOOTH PASTE AND INTRODUCTION OF SFMR IN A GROUP OF 6 YEAR OLD CHILDREN IN KANDY, SRI LANKA

E.M.U.C.K. Herath[1], B.G.T.L. Nandasena[1], K. Perera[2], A. Steepanson[2], S.C. Ratnayake[3], H. Ogawa[4], Y. Makino[4], H. Miyazaki[4]
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[4]Faculty of Dentistry, Graduate School of Medical and Dental Sciences, Niigata University, Niigata, Japan

Dental caries has become a most significant public health problem among Sri Lankan children and adults. The WHO oral health report 2003 noted that the prevalence and incidence of dental caries can be controlled by the joint action of the community, professionals and individuals. In fact, this paper outlines

the effectiveness of fluoride tooth paste in caries reduction and the recent development of public health approach to the use of fluoride mouth rinses at school levels for 6 year old children. Kandy district was selected based on the naturally occurring low waterborne fluoride. Total of 441 children aged 6 years were recruited and their parents' socio-demographic data was surveyed. Mean dmft/DMFT (decayed, missing and filled teeth) and dmfs/ DMFS (DMF tooth-surfaces) were recorded. According to the logistic regression analysis on parents' socio-demographics, schoolchildren who used fluoride toothpaste showed lower incidence of caries than others, (OR=0.24, $p<0.05$) emphasizing that fluoride toothpaste reduce increment of dental caries in primary schoolchildren.Mean dmft, dmfs and DMFT was 3.5±0.36, 6.78±0.79 and 0.02± 0.01, respectively, and no significant differences were observed between boys and girls. Caries prevalence was 67.8%. Proportion of d (decaed) component within dmft was 76.4%, m (missing) component was 12.9% and f (filled) component was 10.6% respectively. When compared these results with the National Oral Health Survey -2003, both prevalence and incidence yet to be remain at a very high level.These results revealed that fluoride tooth paste itself cannot the caries among Sri Lankan children. As a result, the first community program of School based Fluoride Mouth Rinse (SFMR) program was implemented in Kandy in 2010. Acknowledgements; Sri Lanka Dental Association is acknowledged for the research grant

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Journals

Standard journal article

Bartlett IG, O'Keefe P. The bacteriology of the perimandibular space infections. JOral Surg 1979; 37: 407409.

Corporate (collective) author

WHO COLLABORATING CENTRE FOR ORAL PRECANCEROUS LESIONS. Definition of leukoplakia and related lesions: an aid to studies on oral precancer. Oral Surg Oral Med Oral Pathol 1978; 46: 518-539.

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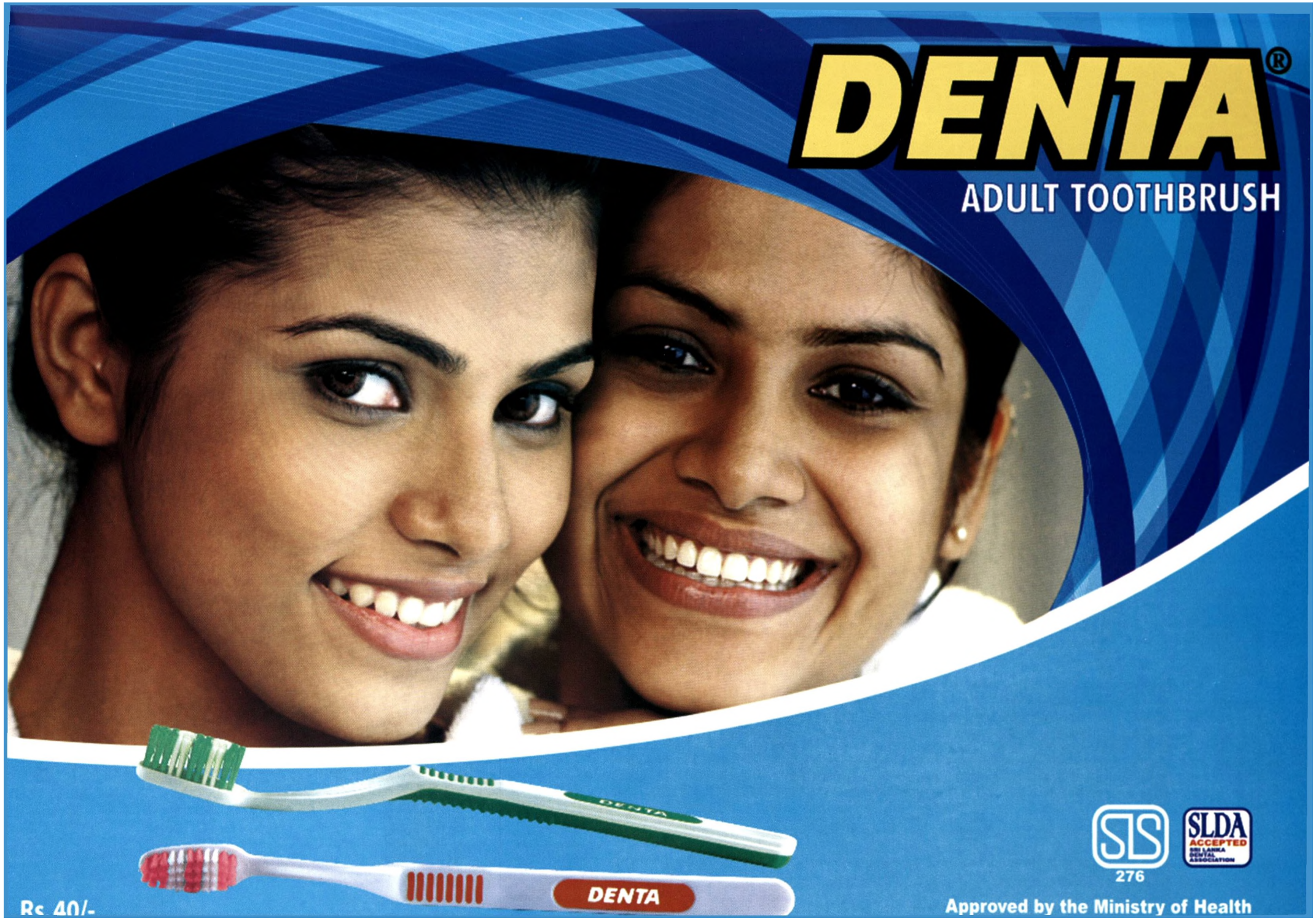
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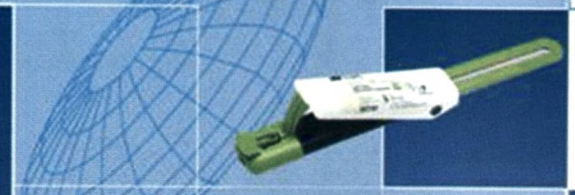

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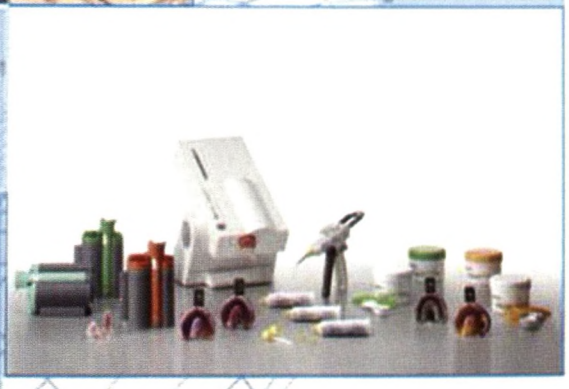

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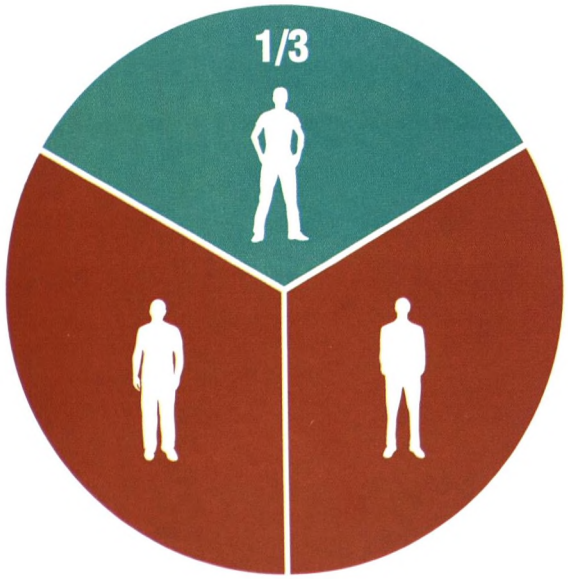

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Reference

1. GlaxoSmithKline data on _ le, You Gov PLC, 2010

(Total sample size was 2079 adults. Fieldwork was undertaken between 17th to 20th December 2010. The survey was carried out online. The figures have been weighted and are representative of all GB adults - aged 18+)

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