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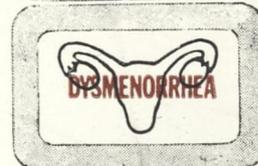
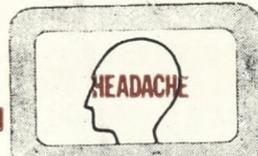
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EDITOR: DR. RANJITH WEERASINGHE

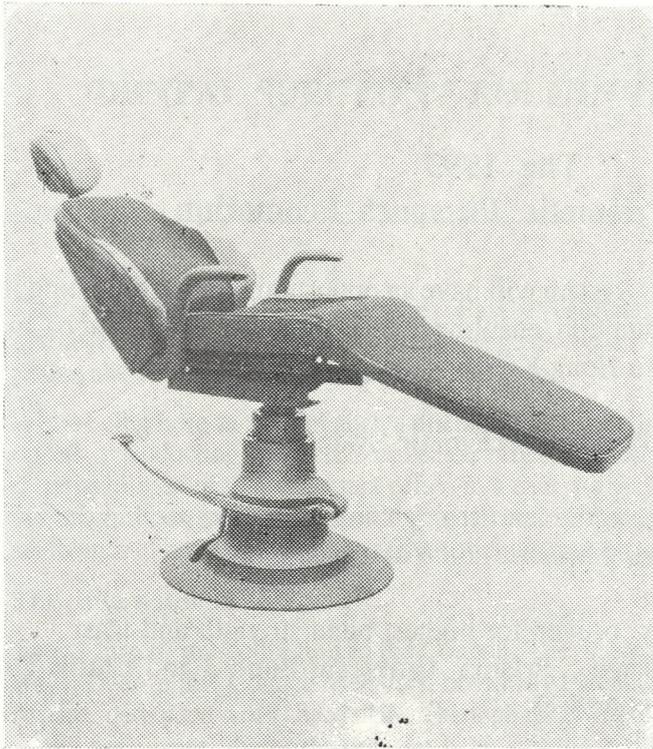
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DENTAL SURGEON'S ROLE IN THE DIAGNOSIS OF DISEASE

Dr. Sunil N. Fernando

Past President, Dr. Ira Ratnayake, Past Presidents SLDA, Members of the Council, SLDA Members, distinguished guests, ladies and gentlemen, I wish to express my sincere thanks to you, Dr Ira Ratnayake for your kind words of introduction.

While being here in front of such a distinguished gathering, I am deeply conscious of the honour bestowed on me by inducting me in this esteemed office of President of our Association. I pledge to take on the responsibilities of this important office in a true spirit of humility. But, when I ponder, in retrospect, on the magnificent heights attained by my illustrious predecessors-the Past Presidents- I seem to get some semblance of hope that I too may strive to achieve at least a fraction of theirs by emulating their good example.

The International Scene

Then I turn to my colleagues in the Council. They have already been of tremendous help to me in various ways. Dear fellow Council Members, obviously I will be leaning very heavily on each one of you for a year of hard, dedicated work ahead of us. Through the devotion and sacrifices of the Presidents and their Councils of the past years, the profession has been steadily climbing the ladder of international participation and recognition. During recent years our Association has advanced by vast strides and has gained pride of place alongside those of the bigger nations in the World Dental Community. For instance in December last year, in Lahore Pakistan we saw the birth of a new regional body - the South Asian Dental Associations' Federation (SADAF), the primary objective of which is to ensure individual and collective self-reliance in skills, technology, equipment and materials among the South Asian Countries. Sri Lanka, I record here with a sense of dignity, was in the forefront right up to the point of formation of this South Asian Organization for regional co-operation in the sphere of Dentistry. Then again in Auckland, New Zealand in March this year, we had the distinction of being accorded the privilege to host the 19th Asian Pacific Dental Congress in Colombo in 1996. For a small country such as ours, to have attained such heights within the span of a couple of years, it is truly commendable particularly as we gained membership in the Asian Pacific Dental Federation also, only in the mid nineteen eighties.

History will one day record how the seeds of our Association, planted 60 years ago, took root and grew steadily until she attained her current status. Now that the SLDA has taken on a decidedly international stance, we envisage the whole-hearted sincere co-operation of each one of you - dear fellow members - for success in our future ventures. We must all pull together with singleness of heart and aim - towards a resounding success at the 1996 APDC in Colombo, that will confer lasting prestige and glory unsurpassed on our motherland!

In the end, what counts is the collective effort - not individual glory. Here I am reminded, quite aptly perhaps, of the motto of one of our girls' schools which, I came by as my daughters are there. It goes as :- "NON SIBI SED OMNIBUS". "Not for one, - but for all".

My worthy predecessor, Dr. Hilary Cooray, in his Presidential address last year, dealt comprehensively with every conceivable aspect of the history and evolution of the SLDA. It is my intention today to highlight certain aspects of the "*Dental Surgeons role in the diagnosis of disease*" and touch on the benefits that will accrue from "*timely oral diagnosis*".

(Excerpt of the Presidential address delivered by Dr. Sunil Fernando following his induction as the President, S.L.D.A. 1992/93.)

Oral Medicine - Its Beginnings And Development

Dentistry in Europe and in North America became a learned profession in the middle of the 19th century. From the inception, in its creation and development, Dentistry was associated with Surgery. To this day, it remains an intensely practical discipline and much time is devoted to the acquisition of skills in training. The qualified Dental Surgeon too devotes the greater part of his time to surgical procedures in the mouth. In recent years, however, there has been growing awareness of the broader concept of oral health when it was realised that systemic factors frequently influence oral tissues- that many of the diseases which are considered " medical " have important consequences in the mouth. This trend has led to the emergence of the Oral Physician, concurrently with the initiation of that branch of Dentistry known now as " Oral Medicine". The oral physician is concerned with all aspects of General Medicine in the way in which they relate to the mouth.

The oral cavity serves as a store-house of information concerning the entire body. Thus though the day to day tasks of the dental surgeon demand a high degree of competence in psychomotor skills, he usually does, and essentially must, make use of his attainments in the cognitive domain in order to play a prominent, active and useful role in the early diagnosis of disease. This is all the more so, because a useful window through which one gains insight into the entire body is the oral cavity. The **oral findings** often act as " markers" to latent disease elsewhere. Thus they may either be the tell-tale signs of past disease, indicators of current disease or at times, even harbingers of future disease.

These **oral changes** may be trivial and overshadowed by other ill-effects of the systemic disorder or they may be the presenting feature. There are even instances when such oral abnormalities precede the systemic signs by weeks or perhaps months. Here lies a very significant point, more about which will surface as we go along. Unfortunately though, oral changes such as these, may at times be confused and mistaken for purely local disease of the mouth. And when that happens an excellent, early diagnostic opportunity is missed. This is where experience in clinical oral pathology counts. One should be suitably equipped to sort out the more sinister ones with systemic overtones from what is purely a local malady of the mouth itself (oral mucosa). And we must remember there are no short-cuts to this diagnostic exercise- a complete history taking, followed by physical examination and such special investigations as are relevant to the particular case are always obligatory.

On an accurate diagnosis, hinges the success or failure of treatment of any disease. As often expressed, and quite rightly too, diagnosis must always precede treatment. **According to Cutler 1979**, " There is no, more-important field in medicine than diagnosis". He goes further to say, "Without it, we are charlatans or witch doctors, treating in the dark, with potions and prayers. Yet there is no field more difficult to teach. Strange - that this art and science has not attracted innumerable theorists to make it more teachable! Thousands are studying such phenomena as membrane-transfer, yet few strive to make a science of diagnosis".

Although looking into the oral cavity- in an effort to unravel incipient disease in other parts of the body- had been practised since the time of Hippocrates, this science of Oral Diagnosis and Oral Medicine has been slow in its development compared to other disciplines. The emergence of University Departments in this speciality in some Dental Schools, even in U.K., occurred relatively late. This sub-speciality within Dentistry began gathering momentum with the increasing realisation of the close association between general health and oral health.

An endless number of examples of the " oral - systemic inter-relationship" could be presented. But time being a constraint, I will highlight a few that will establish this relationship beyond doubt.

There are disease conditions that affect the teeth alone **or** teeth together with bone, **or** teeth with bone and in addition soft tissues **and** yet another category where teeth and soft tissues only are involved. Clinical examples of each of these types were then presented, illustrated by slides.

Viral Infections

There are many viral infections seen within the mouth and out of them I have chosen Herpes zoster as it will enable me to emphasize certain diagnostic principles.

This is caused by Herpes zoster or Varicella zoster virus. First exposure to this virus causes chickenpox or varicella and subsequent infection leads to Herpes zoster. Symptoms are in the facial region. In the initial stages there is severe pain, mimicking odontalgia or dental pain. In fact some of these patients rush to the Dental Surgeon, complaining of severe toothache, but on examination, no obvious cause may be found. The alert D.S will then look for an alternative explanation for such pain. The pain is followed by eruptions - vesicles - having a characteristic pattern, along the distribution of the 3 divisions of the trigeminal or 5th cranial nerve in the face - namely ophthalmic, maxillary and mandibular. The lesions are strictly unilateral - seen strikingly when the palate is involved - where they reach the mid-line and stop there.

So a patient, in the prodromal stage of Herpes zoster infection, may present chiefly with an odontalgia or dental pain. This is merely one among many other such deceptive situations. A whole host of conditions exists where, when the patient comes complaining of pain in the tooth, the cause really is elsewhere. Such conditions ironically, produce pain mimicking a toothache or numbness or anaesthesia or paraesthesia in the lips or the face. Some of these diseases are maxillary sinusitis, maxillary sinus carcinoma or cancer, and a variety of intra-cranial lesions - acoustic neuroma at the cerebello-pontine angle, meningioma, aneurysms, disseminated or multiple sclerosis, cerebro-vascular disease, syringobulbia. **The underlying philosophy here, is that when a patient presents to the Dental Surgeon, with facial pain or anaesthesia, not accounted for by local pathology, that patient should not be lightly dismissed. On the contrary, he will require specialised investigation in a Consultant Unit, and as is appropriate to each individual case, an ENT or neurological opinion will be imperative.**

Disorders Of Blood

As the next group, let us look at some blood diseases, where the early manifestations could be recognised in the oral cavity. Suspicion - once thus aroused - the clinician should proceed with the relevant investigations for confirmation. Anaemia, leukaemia and purpura are just 3 such examples.

Anaemia due to iron deficiency - of a microcytic, hypochromic type - can present with glossitis, a pale smooth tongue with atrophy of the filiform papillae. Oral changes may be the precursor of the more obvious features of anaemia, and promptly, a blood picture, serum ferritin, serum B 12 levels, serum and red cell folate should be done.

(Incidentally, I should mention here, that a proper examination of the tongue, can yield valuable information relating to a number of systemic conditions - haematological, nutritional, endocrine, neurological, dermatological and the list goes on and on) Slides were shown to demonstrate geographic tongue, lichen planus, scrotal tongue of Melkersson Rosenthal Syndrome.

If we see spongy, swollen, easily bleeding gums such as this - at times even with areas of ulceration, in the young, with unexplained fever and malaise, acute monocytic leukaemia merits careful consideration.

Thrombocytopenic purpura - either idiopathic or secondary - may appear like this as on the petechiae palate. The platelet deficiency is not always merely quantitative only, but could also be qualitative as well, to detect which sophisticated tests such as platelet aggregation with collagen ristocetin, are necessary.

It is essential to recognise these patients prior to any surgical procedure, as they require special preparation.

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Skin Diseases

Another area in which a close relationship exists is between diseases of the skin and mucous membranes of the body- prominent among which is the oral mucosa. Here, either the skin or the oral mucosa may be affected alone, or both concurrently. **There are many instances where the oral findings yield valuable premonitory information.**

A classic example of this is Pemphigus vulgaris, a skin disease which may at times prove fatal. Here the mouth may be affected as much as 1 or 2 months prior to the skin. In this early stage, prior to skin involvement, the disease could well be diagnosed, by the presence of intra-epithelial bullae, positive Nikolsky sign, acantholytic or Tzanck cells in epithelial smears, and of course where facilities do exist, immunofluorescent studies to demonstrate antibody to the inter-cellular cement substance of the prickle cell-layer. These are the hall-marks of Pemphigus vulgaris. By instituting prompt treatment after confirmation of the diagnosis at this early stage, the progress of the disease could be arrested and the appearance of skin lesions prevented. If, on the other hand, the disease is allowed to progress to the stage of extensive skin involvement, the outcome may be fatal due to massive loss of fluid and electrolytes. Here, timely oral diagnosis then, is life- saving.

I have come across several patients in whom a positive diagnosis was made and treatment commenced early, when all that the patient complained of was the sensation of blisters and soreness confined to the mouth only. This may remind us of the proverbial "stitch in time".

On the basis of what I have been saying so far, you will perhaps agree, that there are very cogent reasons, why we must be motivated to look closely into the oral cavity, and beyond-..... through it. This is ultimately going to be of benefit towards the well- being of the patient as a whole

Bone Anomalies

Next let us look at some common diseases of the jaw- bones. Though rare in other bones, cysts are one of the most common in the jaws, presumably as a result of odontogenic residues or remnants. The two most common varieties arise in association with non- vital or dead teeth, and buried or unerupted teeth. One reason why teeth remain submerged in the jaws is the lack of eruptive force or eruption potential.

Anyhow the observation that delay or lack of eruption of several teeth could possibly be related to a state of retarded general body growth is borne out by the example that I will be showing in a little while. It also emphasizes the principle that when a cyst is discovered in the jaw, depending on the particular situation or circumstances one should not stop at that but look for other likely pathology elsewhere in the body too.

A patient was once referred to my unit with a lump in the lower jaw on the right hand side. This lump was of a cystic nature with several teeth within it. It was a straightforward dentigerous cyst. However, his facial, cranial characteristics, stature and the general appearance were somewhat curious and a skeletal survey was done. These were numerous abnormalities, very obvious in his X- rays of the skull, chest, shoulder, hands, pelvis and knee joints. These were explained during the address with the help of slides. Thus a patient who saw us simply because of a jaw cyst was eventually diagnosed as a full-blown case of cleido-cranial dysplasia or dysostosis. **The lesson we derive from this then is that awareness as regards coincidental anomalies elsewhere is important when dealing with seemingly localised jaw disease, in order that such patients could be handed over to the respective specialities in time-when it is in the interests of the patient to do so.**

Acquired Immuno Deficiency Syndrome (AIDS)

To further complicate, an already vexed problem of oral diagnosis, we have yet another recent addition to the list-and that is infection by the human immuno-deficiency virus or HIV - creating the scourge of all mankind - that killer disease, " AIDS ". Sri Lanka was unfortunate to have her own first AIDS case in April '87. Since then there has been a steadily rising incidence. Total up to July 1992 was 59 of which 12 were foreigners and 47 local, 30 being full blown cases.

We can expect to see certain oral manifestations frequently in patients who have succumbed to this infection. These oral signs are of early onset and give useful diagnostic clues as I have already shown in respect of a variety of other diseases.

A whole range of clinical states in connection with AIDS was then shown. Should any of these features arise in the clinician any suspicion of a possible HIV infection; such patients must be referred to the appropriate specialized unit.

Oral Cancer

Finally ladies and gentlemen, while keeping to my theme of " Oral diagnosis ", some reference must be made to " Oral cancer " or " mouth cancer ". It is one of the ten most common cancers in the world. In Sri Lanka, India, Pakistan and Bangladesh, it is the commonest and accounts for a third of all the cancers. More than 100,000 new cases occur every year in south and S-E. Asia, with poor prospects of survival. Thus it poses a problem of considerable magnitude for the W.H.O collaborating centre for oral cancer prevention.

These are some of the ways in which a patient with an early, suspicious lesion may come to us. Slides were shown. A cancer could arise on a previously normal area or in the majority an intermediate phase called pre-cancer may intervene. In this latter category, detection can be up to as much as 15 years prior to transformation into an invasive carcinoma. A small minority of white patches (10%) or dark, velvety-red areas are two examples of pre-cancerous states.

But as there is a whole host of white patches in the mouth, expertise is needed to pick up the sinister ones from the harmless ones. The most dependable tool on which even the experienced clinician depends, for confirmation of diagnosis, is the biopsy.

An ulcer is another way in which oral cancer manifests. Though there are so many different types of mouth-ulcers, a malignant ulcer - apart from having an elevated, everted edge and perhaps an indurated base-shows no signs of healing. It is often painless - unless secondarily infected. This, however, is an unfortunate feature, because pain drives the patient to seek advice early. Devoid of pain, the patient carries on regardless, quite oblivious of the deadly disease in his mouth. Hence it is not surprising that in our regions, more than 50% of oral cancers are detected, only after they have reached an advanced stage. Slides depicting the very late stages have shown here.

Benefits Of Early Diagnosis To Individual And Community

Now oral cancer is a disease, like many others, where the earlier it is detected the simpler, cheaper, the more effective the treatment and above all, the chances of restoring almost to normality are correspondingly very high. When the disease is too far gone, the treatment is essentially more complex, expensive, long protracted, yet without guarantee of a lasting cure. In some advanced cancers, the 5 year survival rate is only 10% according to a recent W.H.O. report. Even otherwise a patient in this stage has to be subjected to radical surgery and rehabilitative procedures-he not only suffers physical handicap, but intense psychological trauma too.

All knowledge should ultimately be for the benefit of mankind. The question then is, whilst being in all these scientific advances, how best can we be of service to the community or how can we translate this know-how into practical measures in order to procure tangible benefits to the population at large? Well, it could be effected by detecting early, certain diseases that they are harbouring, and of which they are quite unaware. **In this context I refer not specifically, to oral cancer alone, but also to all such other diseases with early signs in the mouth - some of which, we have dealt with here.** There are quite a few of these where early detection and intervention will make all the difference between life and death,, and a great many where so much suffering for the victim could be prevented.

One way of achieving this objective will be to screen for overt disease all patients who attend medical institutions. It became clear from the screening programme undertaken by Prof. Warnakulasuriya of the Dept. of Oral Medicine, University of Peradeniya in Kadugannawa that even primary health care workers, suitably trained, could be relied on to detect oral precancer and cancer with an acceptable degree of accuracy at a field level. They may be engaged to routinely examine the mouths of patients who attend medical institutions for other reasons. With firm commitment, correct priorities and concerted effort by government, NGO's and even motivated individuals grouped together, strategies can be designed and programmes implemented with prevention and early detection as their objectives.

For such an exercise to be fruitful, the percentage of the population covered by this means should be significant. But what the statistics reveal is to the contrary. **We cannot hope to even touch the fringe of the problem, if we wait passively to "spot" such cases, until they come to us.** If we are to render this service, we cannot be complacent, but will have to go out to them-in the community. The task truly is formidable - may even seem insurmountable. Faced then with such a seemingly invincible task, let us not despair, but forge our way ahead remembering the old admonition that it is better to light one candle than to curse the darkness! In the words of one of our recent Past-Presidents, "We must reach out". And in the process, we must be diligent to render professional services to the under-privileged with compassion and understanding.

When Jesus Christ sent out his twelve disciples on their ministry in this world, His direction to them concerning the sick was, "Freely you have received, freely give." The smallest good deed is better than the greatest good intention. Though your own contribution might seem a drop in the ocean let us not forget - that it is little drops of water that finally go to make the sea. Or let us consider, the community oriented or collective efforts of such frail creatures as ants or bees-- what great tasks they accomplish through singleness of aim.

Through such a programme of action, the economic saving alone in terms of health - care cost to the country will be enormous. Even otherwise the prevention of suffering among our fellow-human beings makes it mandatory; and in so doing, we will be contributing in however small a measure some component that will go to enrich or augment the health of our nation, (which may be referred to as "Suwa Saviya") one important facet of His Excellency the President's broader concept of "Janasaviya".

In conclusion, I wish to leave with you, some thoughts on a new concept mooted by the W.H.O. In popular parlance it goes as "Look a friend in the mouth": In simple terms it means - through extensive health education programmes, training and motivating the people themselves, to look into their own mouths in the mirror or to look into each other's mouth. They have to be shown to do this systematically, so that no area is missed. If they spot a white or velvety-red patch or suspicious-looking ulcer or anything strange on the mouth-lining, such a person is to call over at the nearest medical institution for proper examination or investigation or referral where necessary.

This system has gone on for some time now with success in certain parts of India. During his visit to Sri Lanka a few months ago, Dr. Stjernward, Head of the W.H.O. Cancer Unit, Geneva, showed much enthusiasm in initiating such a programme in Sri Lanka too. Preliminary work in this regard is now under way and for a start it is to be implemented in the Southern and the Central Provinces. The success or otherwise of this novel approach could only be determined with the passage of time.

So this means, that for some considerable time more, we will have to rely on our on - going, out - reach activities. Then may we with one mind, march forward with all the knowledge and diagnostic skills at our command and with renewed vigour, towards the noble task of alleviating human suffering.

It is at moments such as this that the exhortations of great religious leaders keep ringing in our ears.

Yo gilanang upatehi, so mang upatethi" - "One who tends the sick follows my Dhamma" as enunciated by the Lord Buddha. According to Jesus Christ, "Whosoever ministers to a fellow human - being in need or sickness, it is as if that person did the good deed to Jesus Himself and his reward in Heaven is great."

Thus the words of wisdom of these two great leaders are in perfect harmony in respect of the care of the sick and the suffering and the teachings of other great religious leaders also emphasize the same. At this point, it is my intention to fade gradually away and let the words of wisdom of these great leaders reverberate in our ears and be uppermost in our hearts and minds as we depart tonight!

COMPUTERS FOR THE MAINTENANCE OF NON CLINICAL DENTAL RECORDS

by

Dr Tilak Jayaweera BDS (Cey) DPH Dent (Sydney)

Meticulous planning is the keynote for success for any organisation. This could be done only by studying the past, monitoring the present and making changes accordingly where ever necessary for the future. This process cannot be accomplished without proper records. Therefore records and their maintenance are important and essential features for the efficient functioning of any organisation.

A dental office is no exception to this universally accepted rule. Traditional manual record keeping may be adequate if the numbers of records to be maintained are small, but if they are large the manual procedures could be time consuming and sometimes not cost effective.

Computers could be used to make this task a lot easier and efficient. Whether computerisation of non clinical dental records is required will depend on, the type of practise, its size, location, patient profile probability, attitudes of the different dentists, and lastly on the current hardware, and personal preference of the dentist.

There are there main areas that have to be covered under the non clinical records viz:

- a Appointments
- b Recalls
- c Inventorising

a Appointments

An appointment can be defined as an agreement made in advance between two parties for each others convenience for the performance of a specific task, at a specific time. In fact it is a type of contract. Since these are made in advance a record has to be maintained for easy reference and for possible alternations.

Most dentists see patients by appointment. As mentioned in the previous para this is for the convenience of the dentist enabling him to plan out his work and make the maximum use of the surgery time and dental auxiliaries, which are his available resources. This is beneficial to the patient as he need not waste his time in a waiting room for treatment.

The choosing of an ideal appointment system will depend on the type of practice, type of dentistry practised and on the behavioral patterns of the patients. This creates a doubt as to whether a dentist should strictly follow a schedule or not. A more flexible system would be to allocate a time either daily or weekly depending on the practice for the benefit of those who will like to come for treatment without a prior appointment, outside emergencies.

The conventional way of maintaining an appointment system would be to have one paper for each day with modules of 10 to 15 minute intervals for each patient for routine treatment, and to have this by the reception and to allocate times as and when they are requested either personally or by telephone.

In a computerised system the time factor taken either to give a fresh appointment or to make an alteration to an already given appointment, will take only a very short time.

The other advantages in a computerised system are:

- (1) The practice activity can be monitored,
- (2) The system can log which times and days which are most popular,
- (3) The system can show a demand pattern
- (4) Rescheduling of appointments if the need arises where patients can be contacted for changes in the appointments as all telephone numbers, addresses can be very easily retrieved.

The only disadvantage being if the computer fails either due to a machine failure or due to a power failure then a conventional appointment book may be considered as a better choice.

b. Recalls

It is important for the growth of a practice to ensure regular attendance of patients. In a recent survey done in the United Kingdom it was found that 75% of the dentists felt that recall system was essential. The manual method of doing this is to write the patients name and address at the time of the last appointment when he came for treatment, in a post card. These cards are then stored separately for each month and are taken out regularly and posted. The instructions given to the patients are very impersonal requesting them either to make an appointment or cancel the appointment or cancel the appointment given in the event of being unable to keep it.

This is a very cheap and effective method as long as these cards are written after every treatment and is properly stored. The management of this recall system will be easy if the period the patients are to be called is fixed for eg: 6 months intervals. If the recalling interval differs from patient to patient and if it is a busy practice the system will not be very effective and computerisation will not only be justifiable, but also will make the recall system more effective.

In a computerised system the appropriate recall intervals could be found by the patients records and instead of postcards a personalised letter could be sent out very easily.

Using the utilities of either a dental software package or a word processor facility, documents, referral letters, appointment cards, post operative advice sheets, health education newsletters, wages, slips, and laboratory instruction sheets could be printed quite impressively, which will have a better image of the practice.

c. Inventorising of equipment (stock control)

- (1) capital
- (2) consumable

"Rome was not built in one day" is an old saying likewise unless the dentist has a very big capital to start a practice more often than not he will have just the basic requirements for a dental practice at the start, and with the growth of the practice gradually more equipment will be added on to the stock. This is as far as the capital equipment is concerned.

In the case of consumable items it is very unlikely that any dentist will purchase large quantities at the start of his practice, as he ought not know the extent to which the practice may grow in the future. In other words through the usefulness of maintaining a stock cannot be disregarded at any cost whether one should have a computerised stock that is control system will undoubtedly depend on the size of the practice and the type of dentistry that is practised.

practise will probably will have all necessary equipment that are in vogue at a particular time with a very few exceptions depending on the location and the availability of the latest technology. From this point onwards the money spent on consumables will take a fair portion of the annual expenditure. An average dental practise at this level will have 100 to 200 types of dental instruments, and 200 to 300 different types of dental materials some of which will be very expensive with probably a limited life span.

Every time a new instrument is purchased from a dental supplier it is customary that receipts are maintained possibly filed and the item is taken into stock. As the practice grows these files also will grow with each purchase.

Records of purchases have to be maintained as one should be aware of:

- (a) What is in stock, (b) What type, (c) What make, (d) What specifications,
- (e) When purchased, (f) From whom purchased (g) For how much (h) The duration of the warranty,

If one has to purchase additional equipment for example, excavators either in a single or in a multiple practice it is a must that all the above details have to be known if one has to make the maximum use of the money spent.

The manual method of doing this would be to go through the files to find out the numbers you have in stock the different prices that you have paid for their purchases, whether any were broken, if so from whom those were purchased. These details are bound to help you to make the correct decision in your purchase. To get this information either the dentist or someone who is knowledgeable will have to spend quite a while going through these records, on the assumption that these are all kept safely.

Now let us see how a computer will tackle the same problem. All previous purchases can be stored even in a spread sheet application if sophisticated soft ware packages are not available; ie information such as, number of equipment in stock, make, type, the cost, the date of purchase, the name of supplier, etc. All these information can be retrieved very easily and hard copies could be obtained for study purposes prior to the individual purchases. In a system of this nature all one has to do is to keep on updating records as and when items are purchased.

This will not only prevent duplication and wastage of valuable technical time but will also make one constantly aware of what one has, the condition of the items available, what one needs etc, which are the fact factors that are considered in technical evaluations prior to purchasing equipment in large buisness establishments.

In the case of consumable items either in a small solo practice or in a busy multiple practice purchases are done either weekly, monthly, every two three or four months intervals, depending on the size of the practise, as most of the consumable items will have a limited life span.

In order to purchase these materials one has to know the available stock, the requirement for a specific period of time. If it is a very small practice it may be possible to glance through the cupboard and ascertain the quantity of materials needed.

This is not so easily done in a busy practice. depending on the social backgrounds and the morals of the countries pilfering cannot be totally excluded. Based on how the materials are stocked every possibility exists for the misplacing of materials which may end up in unwanted purchases. There are very many instances in most of the practices that materials are thrown away due to the passing of the expiry dates, and materials are purchased whilst there are adequate stocks.

This is not particular to a dental practise. For any system dealing with consumables at the time of purchase it is a must that one should be aware of the present stock, minimum stock, amount required, for how long and a knowledge of the previous purchases. This has to be done preferably by the dentist himself, who knows best about his requirements. Think of the time he is going to spend on this project if he does this manually. Isn't he spending time that he would have otherwise spent on clinical work? Is it cost effective to waste time on this type of work ? Is it not required to find out whether there are any suitable alternatives ?

Computers could provide answers to most of the above questions. The informations could be retrieved and data analysis systematically done , which will save **time money** and last but not least **prevent wastage**.

Terefore the use of computers in dentistry will undoubtatly be cost beneficials: but the degree of cost effectiveness will depend on the individual practice.

The Management of Early Loss of Deciduous Teeth

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Introduction

There are several situations that can occur in the mixed dentition which may potentially cause or exacerbate a malocclusion. One such area is the early loss of deciduous teeth. The observant dental practitioner should identify this problem when it arises and take the correct action to minimize the effects; That is, the practitioner should be able to practise a degree of "preventive or interceptive" orthodontic treatment as required. It is the purpose of this article to discuss the consequences of early loss of deciduous teeth and suggest the possible management.

Early Loss Of Deciduous Teeth

In general terms the effects of early loss of deciduous teeth are influenced by four factors. These are: The tooth lost; the patient's dental age when loss occurs; the inherent crowding / spacing (or tooth / tissue) ratio; and the arch from which loss occurs.

The early loss of deciduous incisors is uncommon and their loss has little affect on the developing permanent dentition in terms of space requirements. If there is a history of trauma then it is worth investigating whether the permanent successor is displaced or dilacerated, but even so treatment is rarely indicated: quite severely displaced teeth will erupt into the arch. Deciduous canine teeth are occasionally lost owing to resorption of their roots by the erupting permanent lateral incisors. Unilateral loss can cause quite a marked shift of the midline to the affected side so a balancing extraction should always be considered. Incidentally the extraction of deciduous canines is sometimes practised to encourage some spontaneous improvement in incisor crowding, though usually at the expense of some space loss from behind.

If deciduous molars are lost early one of a number of sequelae may occur: The space may close to a degree, it may remain unchanged or it may close only to reopen later on. The outcome depends on a number of factors. 1. The inherent tooth/tissue ratio: space tends to close in a crowded mouth and early loss of a deciduous molar will localise space to the canine and premolar region. 2. Space loss tends to be greater in the upper arch than the lower and following loss of a second deciduous molar rather than a first. 3. The effects of loss are more severe before the first permanent molars erupt. It is therefore always better to hold onto a deciduous tooth before the molars have erupted.

If a second deciduous molar is lost before the first permanent molar has erupted the latter tooth erupts more anteriorly and total space loss may occur. If the extraction is delayed until after the first molar has erupted then in the upper arch this tooth rotates about its palatal root and in the lower arch the molar tips mesially with some rotation. As a consequence the upper second premolar often erupts into the palate and the lower second premolar either erupts lingually or impacts vertically between the lower first molar and the lower first premolar.

If the first deciduous molar is lost early the second deciduous molar and first permanent molar drift forwards without rotation or tilting. In effects the second deciduous molar controls the forward movemants of the first permanent molar. The anterior teeth may spread around the arch on the side of first deciduous molar loss so that there may be a shift of the centre line.

Space Maintainers

It is always questionable whether space maintainers should be fitted following premature loss of cheek teeth. The appliance is being considered for a relatively young patient which is likely to hinder plaque control and increase caries susceptibility in a situation where the deciduous teeth were extracted because of caries anyway. A space maintainer also inevitably requires regular review and possible repair. All this can sap a young patient's co-operation.

A space maintainer is only indicated if it will avoid the need for later orthodontic treatment. This is a situation where the arches are otherwise well aligned and early loss in one quadrant may produce a localised malocclusion for which it is difficult to plan simple orthodontic treatment. Conversely, where the malocclusion is sufficient to envisage later extractions and appliance therapy a space maintainer is superfluous. Remember the natural tooth is the ideal space maintainer so it is best to restore this tooth whenever possible.

Space retainers can be fixed or removable. The fixed space maintainer can be unilateral with a band around the first molar and wire fashioned to hold the second deciduous molar space and contact the first deciduous molar. If space is to be maintained on both sides of the arch then both lower first molars are banded and a wire runs lingually between the bands. The wire touches the lingual of the lower incisor teeth and also maintains the lower inter-molar width, so preventing the teeth from drifting forwards. Removable space maintainers are a simple removable appliance with clasps on the first molars and some form of anterior retention. They maintain the arch length and have the great disadvantage that they can be taken out.

Balancing And Compensating Extractions

Where a deciduous tooth is lost early in a patient with poor oral hygiene and a high caries rate balancing and compensating extractions should always be considered, although opinion remains divided.

In a class I malocclusion with mild crowding in which an upper first deciduous molar is to be lost from one side, the extraction of the contralateral tooth should be strongly considered in order to avoid a centre line shift and to allow for some relief of incisor crowding. This is a balancing extraction. If a deciduous first molar is lost from the lower arch again a balancing extraction should be considered and also compensating extractions of the first deciduous molars in the upper arch, in order to preserve the buccal occlusion.

If the patient has a class II malocclusion, a deep overbite and moderate to severe crowding then extensive orthodontic treatment will be required later on. In this instance it is better to limit the extraction to the offending tooth.

As a general rule the extraction of second deciduous molar teeth should not be balanced or compensated by further extractions; The centre line is not affected and the local malocclusion remains localised in one area.

THE PREVALENCE OF PERIODONTAL DISEASE AMONGST DIABETICS IN SRI LANKA

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Abstract

The main objective of the present study was to determine the prevalence and severity of periodontal disease amongst diabetic patients in the age group of 35-54 years and, compare that with an age and sex matched healthy control group. It was conducted on 168 diabetic subjects attending the diabetic clinic, General Hospital Colombo and, on 56 non-diabetic control subjects attached to Chest Hospital Welisara Ragama, from 29th June 1992 to 25th July 1992. The periodontal status of both groups were detected by using the CPITN methodology. In the diabetic subjects, relevant information regarding diabetic condition including the available recent fasting blood sugar levels were also recorded. It was found that, almost all diabetic subjects were afflicted with periodontal disease and required periodontal treatment, whereas 3.64% of the control group were free from periodontal disease and did not require any periodontal treatment; the difference was statistically significant ($p < 0.05$). The prevalence of both deep and shallow pockets altogether, was highly significant in diabetics ($p < 0.001$) and the percentage of sextants affected with total pockets (deep and shallow) in diabetics (40.59%) was significantly higher than that of control subjects (13.34%) ($p < 0.05$).

Introduction

Periodontal disease has been considered as one of the commonest diseases which affects mankind. It has been estimated that at the age of 40 yrs, 5-20% of the global population is afflicted with serious, irreversible periodontal disease (Miyazaki et al, 1991). Information available from the Global Data Bank of the WHO suggests that after the age of 45 yrs, persons with completely healthy periodontium was non-existent. (Pilot, et al; 1992). In Sri Lanka, the National Oral Health survey conducted in 1983 revealed that 95% of the 35-44 yrs old adults were afflicted with some form of periodontal disease.

Amongst the several aetiological factors for the onset of periodontal disease, diabetes mellitus is considered to be one of the systemic disorders that affects the susceptibility of the host to periodontal disease (WHO Report, 1978) similarly, it is a well established fact that diabetes mellitus has been recognised as a major public health problem affecting 2-5% of the population of the world. Although that there has been numerous studies being conducted on the periodontal status of the diabetic patients, there were no proper investigation done on Sri Lankan subjects. Therefore, it is aimed in this study to ascertain the periodontal treatment needs of 35-54 yrs old diabetic patients attending the Diabetic Clinic in Colombo General Hospital.

Control Group

Staff members attached to the Chest Hospital, Welisara Ragama were selected as the control group. The following criteria were adhered to, in the selection of subjects for the control group.

They are,

- (a) all of them should not have diabetes or any other noticeable disease
- (b) should be between 35-54 yrs old, and
- (c) pregnant mothers were excluded.

All the subjects were appraised of the nature of the survey and their consent was obtained to be included in this study. The same criteria has been instituted in the assessment of the periodontal conditions of the controls as in the case of diabetic group.

Results

Altogether, 224 subjects (168 diabetics and 56 controls) were included in the study. In both groups, there were higher percentage of females. The mean age of diabetics was 45.16 ($SD \pm 4.97$) yrs, whereas the controls were 44.32 ($SD \pm 5.04$) yrs, (Table 1); the percentage income and educational levels of both groups were found to be similar (Figures 1 and 2).

The prevalence of persons affected with shallow pockets (P1) in diabetics (73.06%) was significantly higher ($P < 0.001$) than that of control group (38.18%). However, there was no significant difference in the case of deep pockets between the two groups (Table 2). When the percentage of subjects with healthy periodontium were compared between the diabetics and the controls on the basis of age groups, there was found to be a significant difference amongst the 35 - 44 yrs age group ($P < 0.05$) whereas, within the 45-54 yrs age group it was not significantly different (Table 2). The treatment needs of both groups have been summarised in Table 3. The distribution of diabetic patients in relation to type of treatment of diabetic condition and the duration of the disease has been illustrated in Figure 3.

Discussion

Results available from previously reported studies could not be meaningfully compared with those of the present study due to the variable methods that had been used to assess the periodontal condition. The criteria used to assess the periodontal health were numerous, such as, plaque levels (Hayden & Buckley, 1989), gingivitis (Rosenthal, et al; 1988), loss of attachment (Cohen, et al; 1970) and periodontal bone loss (Emrich et al; 1991). Only in one study, CPITN system has been used to assess the periodontal health of the diabetics (Basic, et al, 1988).

The strength of our study sample was more than the recommended number by the WHO for periodontal health surveys using CPITN system (Miyazaki, et al: 1991). The percentage of females included was higher than that of males in the present study as it is usually observed in hospital based studies (Ratnayake & Cooray, 1991).

The prevalence of subjects free of periodontal disease was significantly higher in the control group than that of diabetics. All the diabetics examined were afflicted at least with some form of periodontal disease and were not free of periodontal disease. This observation is in conformity with other studies (Seepala & Ainamo, 1992; Cohen, et al: 1970), where they showed that diabetes may be a risk factor in periodontal disease. The prevalence of periodontal disease in the 35 - 44 yrs old control group subjects was similar to the findings reported in the National Oral Health Survey that has been carried out in Sri Lanka in 1983 (National Oral Health Survey, 1983).

MATERIALS AND METHODS

Study Population

The subjects were chosen from the patients registered at the Diabetic Clinic of the General Hospital, Colombo. Out of about 6000 subjects who were registered with the clinic, approximately 2000 were within the age groups of 35-45 yrs. From this stratified list, random numbers were called to select 10% of the subjects. Out of the 194 subjects chosen from this method, 32 patients had other medical complications such as hypertension, respiratory illness ect. Therefore, only 168 subjects were chosen to be included in the diabetic group.

Periodontal Assessment

Clinical assessment of the periodontal health was done using Community Periodontal Index of Treatment Needs (CPITN). This has been done by investigator HDNA and the results were recorded on a standard format as recommended by the WHO (Oral Health Survey, 1991).

The CPITN was used in this study for the following reasons;

- (a) ability to carry out an epidemiological survey since it is a partial recording system which needs less time.
- (b) periodontal treatment needs could be assessed using the same system.
- (c) this system is currently being widely used all over the world.

CPITN Indicators

Three indicators of periodontal status were used for this measurement. They are,

- (a) the presence or absence of gingival bleeding
- (b) the presence of supra or subgingival calculus (or other plaque retention factors)
- (c) presence of periodontal pocket
 - (i) shallow (4-5mm)
 - (ii) deep (>6mm)

The teeth examined were 17,16,11,26,27,47,46,31,36 and 37. The mouth has been divided into 6 sextants identified from teeth numbers 18-14, 13-23, 24-28, 38-24, 33-43 and 44-48. A sextent has been examined only if there are two or more teeth present and not indicated for extraction. If a single tooth remained in a sextent it has been included in the adjacent sextent.

CPITN probe

A specially designed light weight probe with a 0.5 mm ball tip is used. A black band is found between 3.5mm and 5.5 mm from the ball tip, for easy assessment.

Method Of Examination

The clinical examination has been carried out at the Diabetic Clinic of the General Hospital Colombo from 29 June to 19 July, 1992.

The subjects were asked to sit on a straight back chair and examination was carried out under artificial light. Before assessing the periodontal status of the subjects, a sterile gauze pad was used to remove the debris from the teeth.

No one between the ages of 45-54 yrs, was found to have a healthy periodontium, either in the diabetic or control group. This may be due to the fact that periodontal disease increases with age as has been observed by many investigators (WHO Report, 1978; Loe & Aneurud, 1986). The percentage of subjects with shallow pockets was significantly higher in the diabetics than in the controls. However, no significant difference was observed between the percentage of subjects with deep pockets amongst the diabetics and controls. This observation favours the current concepts of periodontal disease described by Socransky et al; (1984) that, sites showing periodontal disease activity may undergo prolonged periods of remission, thus progression of the disease does not occur from one stage to the other. Nevertheless, the percentage of occurrence of both deep and shallow pockets was found to be significantly high amongst the diabetics than that of the controls; which supports the findings of Basic et al; (1988) where they claim that periodontal disease occurs in a much severe form in diabetics than in non-diabetics.

All diabetic subjects examined in the present study required at least some form of periodontal treatment according to CPTIN criteria, whereas 6.9% of the controls within the age group of 35-44 yrs did not require any periodontal treatment (Table 3).

The percentage of treatment needs in the control group obtained in the present study is more or less comparable with that of National Oral Health Survey findings in 1983. The high percentage of diabetics found in the 35-44 yrs age group required oral hygiene instructions and scalings is suggestive of the fact that the severity of periodontal disease starts much earlier in diabetics than in the control group and more or less comparable with the findings of Basic et al; 1988.

Acknowledgments

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Age Group	Diabetic patients 168		Control group 56	
	Male (%)	Female (%)	Male (%)	Female (%)
35-44	32 (19.05%)	41 (24.40%)	11 (19.64%)	18 (32.14%)
45-54	44 (26.19%)	51 (30.36%)	12 (21.43%)	15 (26.79%)
Total	76 (45.24%)	92 (54.76%)	23 (41.07%)	33 (58.93%)

Table 1. Distribution of Diabetic patients and controls in relation to Age and Sex

Age	No. of dentate		% TN 0		% TN 1		% TO 2		% TO 3	
	D	N	D	N	D	N	D	N	D	N
35-44	69	29	0	6.9%	100	93.1%	100	93.1	13.04	10.36
45-54	94	26	0	0	96.81	100	96.81	100	21.28	19.23
TOTAL	163	55	0	3.64	98.16	96.36	98.16	96.36	17.8	14.55

Table 3. The percentage treatment needs

TN 0 = No treatment required - periodontally healthy

TN 1 = Oral hygiene instruction (OHI)

TN 2 = Scaling and Prophylaxis (SC) + (OHI)

TN 3 = Complex treatment + SC +OHI

Age	% Subjects coded													
	No. Examined		No. of dentate persons		Healthy (A)		Bleeding (B)		Calculus (C)		pocket (4-5 mm) (P1)		Pocket (>6 mm) (P2)	
	D	N	D	N	D	N	D	N	D	N	D	N	D	N
35-44	73	29	69	29	0	6.9	0	0	14.5	58.62	72.46	24.14	13.04	10.3
45-54	95	27	94	26	0	0	0	0	2.13	26.92	73.4	53.85	21.28	19.23
Total	168	56	163	55	0	3.64	0	0	7.36	43.63	73.06	38.18	17.8	14.53

Table 2. Prevalence of subjects affected with periodontal disease

D - Diabetics (Study group)

N - Nondiabetics (Control group)

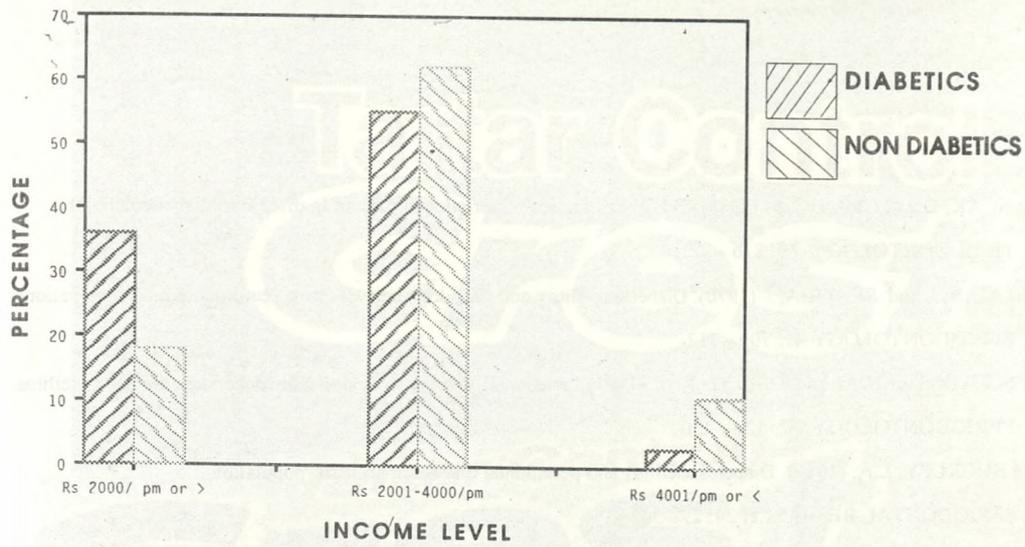


FIGURE 2: THE LEVEL OF EDUCATION OF BOTH GROUPS

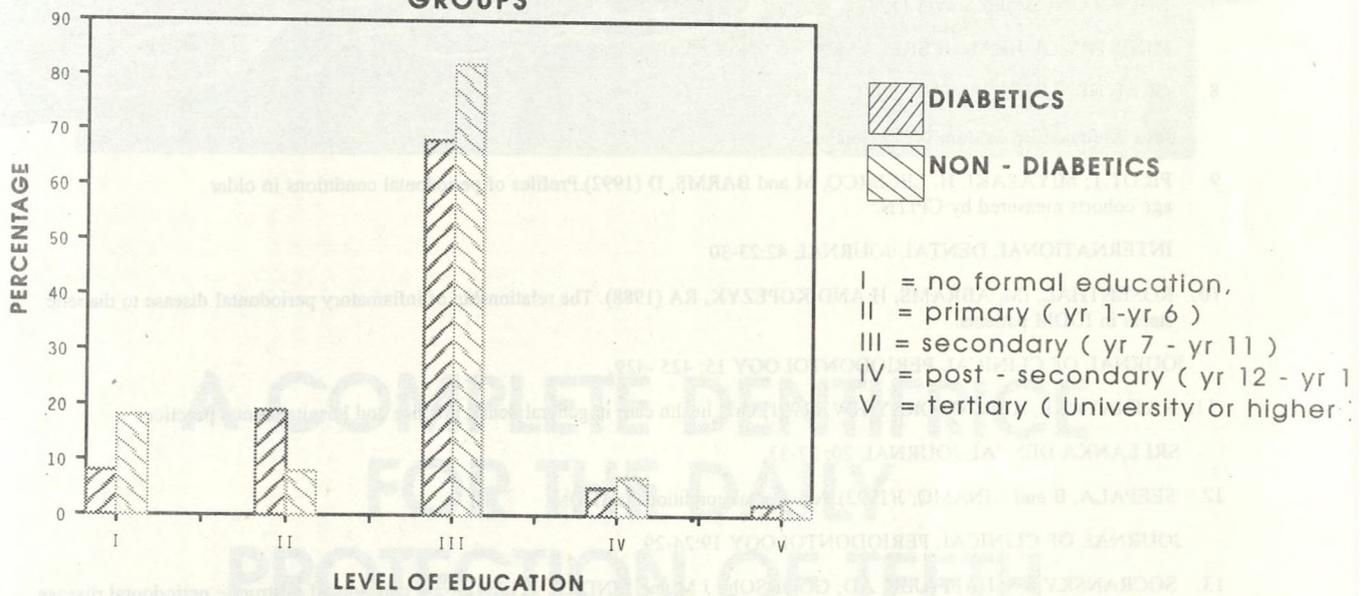
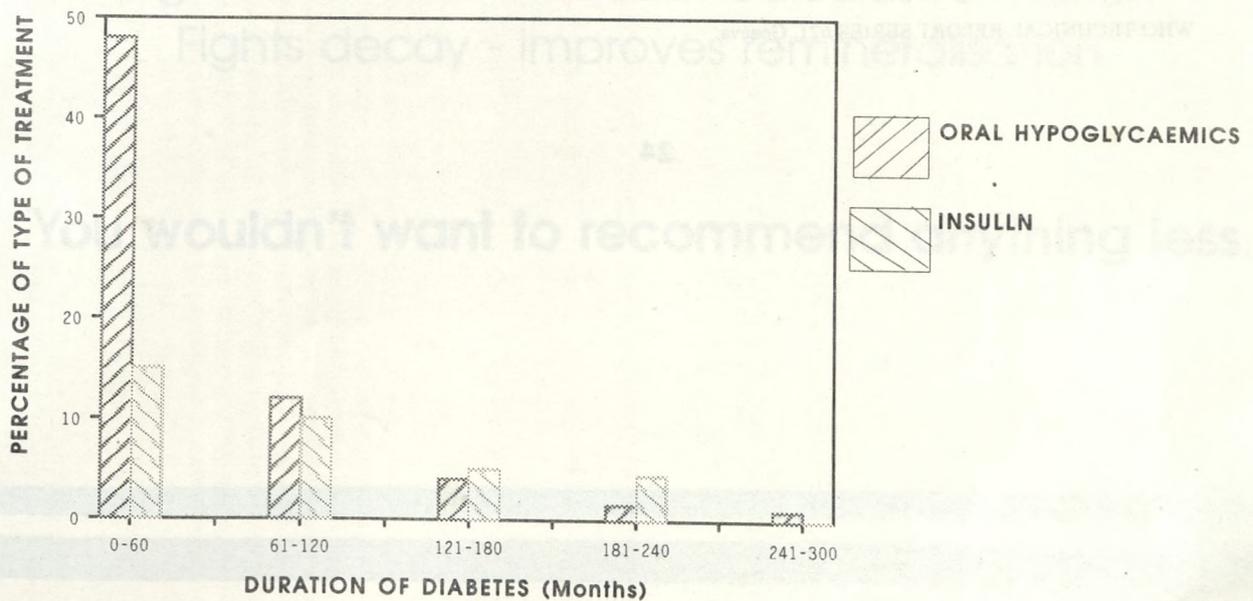


Fig 3. DISTRIBUTION OF DIABETIC PATIENTS IN RELATION TO TYPE OF TREATMENT AND DURATION OF DISEASE



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Fissure Sealants and Sealant Restorations

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Introduction

The idea of sealing pits and fissures in teeth before they become carious is not new. However, the success was limited until better materials and improved techniques became available. The success of the current technique is based on the finding that composite bonds to acid-etched enamel better via-mechanical retention.

Materials

The materials used currently are based on BIS-GMA resin. They can be polymerised either chemically or by exposure to visible light. The former uses two components, base and catalyst which when mixed lead to polymerisation of the resin. The latter has a light sensitive component which initiates polymerization when exposed to visible (blue) light of wave length 430-490 nm.

Most of the resins used as sealants do not contain filler particles. However, filled resins specially formulated for fissure sealing have been made available recently.

The sealants are available as clear, tinted or opaque. The clear ones, although difficult to see at the time of placement, will show if any caries initiates underneath in the fissures. The tinted ones will not reveal any caries underneath but easier to place accurately and any parts lost will also be noticed without difficulty.

Recently, glass ionomer cement has been suggested as a sealant with the advantage of fluoride release. However, some studies suggest that BIS-GMA resin is to be preferred.

Technique

The fissures should be clean and caries-free as far as can be ascertained clinically. 30-50% Phosphoric acid is used to etch the enamel for 20-60 seconds, washed and dried. Then, the resin is flowed into the fissures and polymerized using the fibre-optic light. With the chemically-cured resin, base and catalyst are mixed and flowed into the fissure and allowed to set. Then the occlusion is checked.

Many studies have shown that sealants are well retained **if applied correctly**. Omitting the preliminary cleaning procedure using pumice powder or reducing etching time to 20 seconds do not reduce sealant retention.

Criteria for fissure sealing as a primary preventive measure

The sealing of all caries-susceptible pits and fissures in all young patients might be considered the ideal treatment. However, this might also be viewed as excessive and unjustifiable. Therefore, some countries have approved it as a primary preventive treatment only for children with special needs i.e. children with one or more of the following characteristics;

1. High caries susceptibility, as assessed by previous caries experience and present caries activity;
2. A medical condition that may be complicated by bacteria from infection or some form of dental treatment (e.g. congenital heart disease);
3. Medical condition that makes certain forms of dental treatment hazardous (e.g. bleeding disorders);
4. Mental subnormality making treatment difficult.
5. Patients from families in which older children have experienced high levels of caries.

Therefore, some guide-lines for selecting patients who do not fall within the "special needs group" are helpful. These, while emphasizing the high risk group, are given below:

1. Seal permanent first molar in children who have had extensive caries in their deciduous teeth.
2. If one permanent first molar becomes carious, seal the other three.
3. Seal permanent second molars if one or more first molars had occlusal caries.
4. Seal once the tooth has erupted sufficiently, and certainly within two years.
5. Selected teeth should have sound approximal surfaces.

Fissure sealing as a therapeutic measure

As the accurate diagnosis of pit and fissure caries is difficult, any form "wait and see" is dangerous. This is because subsequent diagnosis may reveal advanced lesions.

If there is any suspicion of active caries being present in a pit or a fissure, it should be managed in the same way that a **known** active lesion is dealt with: either apply a fissure sealant, or place an invasive restoration or combination of the two. Of these, only fissure sealing is reversible as correctly applied fissure sealants can cause arrest of caries, this is the method of choice for managing early pit and fissure caries where appropriate criteria, listed below, are met:

1. A tooth judged to have active or possible active early pit and fissure caries; and
2. Instances where there is doubt as to whether or not lesion is present i.e. **If in doubt, seal.**

The above criteria apply to all pitted or fissured tooth surfaces.

Fissure Sealants - a critique

Fissure sealing is a primary preventative measure. Therefore, sealant is applied to sound surfaces. However, many early lesions in pits and fissures are difficult to diagnose clinically leading to the inadvertent placement of sealant over carious lesions. Nevertheless, several studies have shown that caries sealed effectively does not progress as bacteria are unable to survive. There is indeed evidence to support the efficacy of applying fissure sealants therapeutically to pit and fissure lesions that have been shown to extend up to the thickness of dentine. Under these circumstances bacteria are no longer viable, the lesion may become sterile and allow some remineralization of carious dentine to occur.

Sealant restorations

There will be situations when part of a tooth surface meets criteria for fissure sealing (non-invasive) and another part of the same surface requires caries removal and placement of a restoration (invasive procedure). Under these circumstances both may well be correct and a combined sealant restoration would be appropriate.

The materials selected for the sealant and the restoration component of a sealant restoration should be compatible and composites offer this. Amalgam is contra-indicated as it is not a sealant.

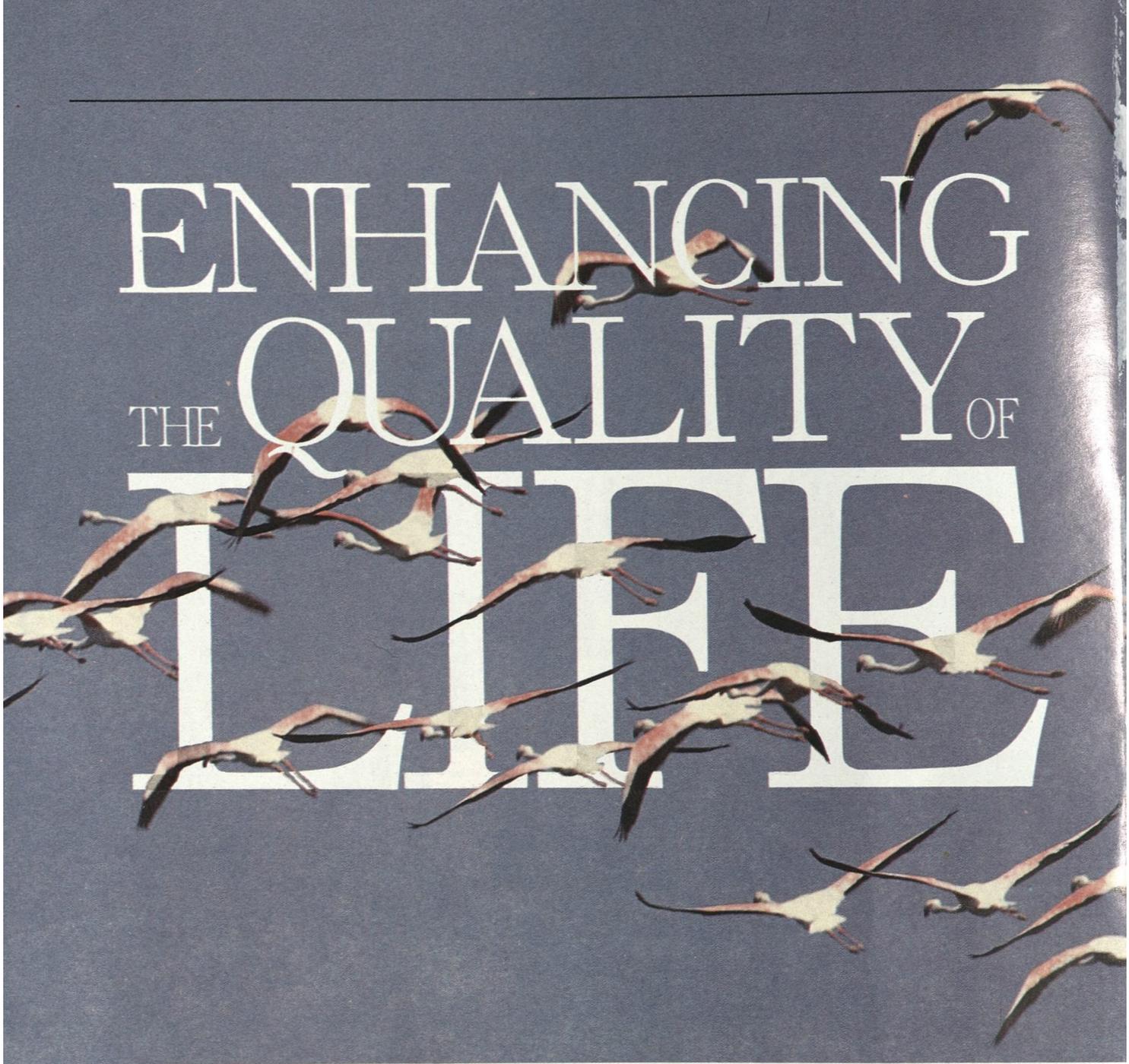
Conclusions

The above also highlight one of the benefits of the sealant restoration: by cutting a cavity, a degree of diagnostic safety is provided with respect to caries in dentine at the base of the fissure which otherwise might be sealed without any attempt at caries removal.

As it is notoriously difficult to diagnose accurately pit and fissure caries, sealant restoration provides some safeguard against both over and under-treatment

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Dental caries and prevalence of mutans streptococci in selected groups of Sri Lankan children

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Abstract

Using the WHO pathfinder survey strategy, the caries status was determined in 12-year-old school children in rural and urban areas of western Sri Lanka. At the same time, the levels of mutans streptococci in the selected children were estimated in order to define the proportion of children with high and low mutans levels. Three hundred and seventy children were selected from four schools, two hundred of them from city of Colombo and 170 from a rural area close to Colombo. Boys and girls were in equal numbers. To estimate prevalence of mutans streptococci in saliva, the "Strip mutans" kit was used. After incubation, the strips were checked against a chart supplied by the manufacturer, and each child given a score between 0 and 3. Score 3 corresponds to about $> 10^6$ Colony forming units/mL (CFU) saliva mutans counts, and Score 1 is less than 10^5 CFU. The results for the total sample showed a mean DMFT of 2.41 (1.96-0.06-0.39, for Decayed, Missing and Filled Teeth respectively) and 25% were caries free. For the rural area, mean DMFT was 3.04 and for Colombo city, DMFT was 1.88. For the total sample, 83% of all decayed and/or filled surfaces affected the occlusal surfaces of molars or premolars. Regarding estimation of mutans streptococci, 16% had mutans class 0, 20% class 1, 35% class 2, and 29% the highest score class 3. The mean DMFT was, respectively, 0.98 ± 1.45 , 1.67 ± 1.89 , 2.68 ± 2.04 and 3.38 ± 2.35 . The differences were statistically significant. 59 children or 16% had 5 or more DMFT, all except eight of them belonging to mutans classes 2 or 3. In comparison with a national survey performed in 1983-84, the data point towards an increase in caries, as the mean caries level in the first study was DMFT 1.9 for the same area. General Preventive programmes focusing on the fissure caries problem are in particular needed for this age group.

Introduction

In 1983-84, a nation-wide survey on oral health was performed in Sri Lanka. For dental caries, that survey showed a mean DMFT caries level for 12-year-olds of 1.9. Data for different districts, for different ethnic groups and for rural and urban areas showed only a limited variation. In 1993, it was decided to make a follow-up WHO pathfinder survey in one of the provinces, with the aim to find out if a change in caries prevalence had occurred. A further aim of the study was to map the prevalence of mutans streptococci in the sample. The so called mutans streptococci include *Streptococcus mutans* and *S. sobrinus* and these bacteria belong to the viridans group of streptococci. They have been identified as the most caries-inducing bacteria found so far^{2,3,4}. Data from several studies have shown that individuals heavily colonized by mutans streptococci on the group level usually have about three times more caries than those without, or those with very low amounts of these particular bacteria⁶. On the other hand, the total caries level is not directly correlated to the amount of mutans streptococci, as a number of well-known factors also have an influence on the caries prevalence, such as sugar consumption, oral hygiene, intake and exposure to fluorides, to give a few examples. Therefore, the impact of the mutans streptococci differs between different countries and areas, and only field studies may reveal the real association.

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Materials and methods

Population studied and caries records. The sample consisted of 370 twelve-year-old children selected from four schools. Two of the schools were situated within the city of Colombo and two schools in a rural area about 25 km from the capital. The schools participated in the National Oral Health Survey 1983-84. The schools were:

Lumbini Vidyalaya. City of Colombo. Only boys were examined at this mixed school. Mainly, the children come from low to low medium class families.

Visakha Vidyalaya. City of Colombo. This is a school for girls. Many children in this school study on special scholarships and may come from various parts of Sri Lanka. Generally, the social class of the children can be regarded as higher compared to Lumbini.

Vidyadana Vidyalaya. The school, for both boys and girls, is situated in a rural area, Kottawa, Colombo District, where most residents are employed in agriculture. The children come from low to very low socioeconomic families.

Dharmapla Kanishta Vidyalaya. This school is also for both boys and girls and situated near Vidyadana Vidyalaya and the social background of the families is similar.

For the rural schools, the sample consisted of nearly one hundred per cent of the 12-year-olds in the two schools, 170 children, 86 girls and 84 boys. For the urban schools, a random sample was drawn and 100 boys and 100 girls were selected. School dental clinics are available at the Colombo city schools.

Caries examination was performed according to methods outlined in "WHO Oral Health Surveys" (3rd ed, WHO, Geneva). The two calibrated examiners had both participated in the National Oral Health Survey 1983-84. Examiner 1 recorded data for 172 children and obtained a Mean DMFT of 2.33 Examiner 2 took care of 198 children and had Mean DMFT of 2.48.

Microbiology.

The "Strip mutans" kit was used for estimation of the levels of mutans streptococci, (Vivadent Vivacare, Schaan, Liechtenstein). First, the child chewed a piece of paraffin, a procedure that stimulates saliva and removes bacteria from teeth. A strip, specially prepared to take up saliva, was then contaminated with saliva and oral bacteria by rotating over the tongue. Excess saliva was removed by withdrawing the strip through closed lips. After incubation in selective broth for 48 hours at 37C, the number of adherent colonies was compared with a chart supplied by the manufacturer, and given a score between 0 and 3. Score 0 indicates low ($< 10^5$ CFU, Colony Forming Units per mL saliva) and Score 3 high ($> 10^6$ CFU) saliva mutans counts.

Statistical methods.

ANOVA and Scheffe's tests were performed. The tests were two-tailed and at a 95% significance level.

Results

Table 1 shows the mean caries levels for the total sample and for urban and rural areas respectively. DMFT for the total sample of 370 children was 2.41 ± 2.19 (Standard dev) with 1.96-0.06-0.39, for Decayed, Missing and Filled Teeth respectively. DMFS was 3.22 ± 3.46 ($2.41-0.28-0.52$) (Table 1). The rural children had higher DMF values (DMFT 3.04) compared to the urban children (DMFT 1.88). The FT component of the rural children was 0.19 and the corresponding value for Colombo city 0.56. Of the total sample of 370 children, 93 (25%) were caries free (Table 2). 28 children had 6 or more DMFT. Highest caries score, obtained for 2 children, was 10 DMF teeth.

Table 3 shows mean number of teeth, number of unerupted teeth and remaining primary teeth. As a mean, the children had 25.3 permanent teeth and 0.5-0.7 remaining primary teeth. Of all caries lesions/fillings present, 83% were present on the occlusal surfaces.

In Table 4, DMFT and DFT values are presented in relation to number of permanent teeth. It appears that the mean DMFT was 1.33 for those children having less than 25 teeth (26% of the 370 children). For those having 25 or more teeth, DMFT was 2.79 (74% of the children).

For mutans streptococci, 16% of the individuals had mutans class 0, 20% class 1, 35% class 2 and 29% class 3 (Table 5). The mean DMFT was, respectively, 0.98+1.45, 1.67+1.89, 2.68+2.04 and 3.38+2.35. The differences were statistically significant ($p < 0.0001$; Scheffe's test indicating differences between mutans classes: 02; 03; 12; 13). Table 6 shows frequency distribution of DMFT in relation to mutans classes. 59 children or 16% had 5 or more DMFT, all except eight of them belonging to mutans classes 2 or 3.

Discussion

The present caries survey in the Colombo district showed higher mean caries levels compared to the National Oral health Survey conducted in 1983-84. The increase was 0.51 teeth. Although the selected areas were not identical, the observation should be taken into account, and in particular, the high DMFT for the rural sample, DMFT 3.04, is to be notified, as the value in fact exceeds the WHO goal for the age group for year 2000. The low proportion of filled teeth/surfaces illustrates that services for conservative treatment are very scarce, in particular in the rural area. The study also illustrates that the main caries problem is occlusal caries and that a majority of the children are affected. That means that the "risk group" actually can be regarded being 75% of the total sample. In fact, a slight underestimation may even have taken place, as 25% of the children had less than 25 teeth, and this low number of teeth was associated with a lower mean caries level. Thus, in epidemiological surveys in this age group, it is important to check number of teeth, as late tooth eruption will influence the caries data.

The "Strip mutans" method measures mutans streptococci in saliva but the main habitat for these bacteria are the teeth. Several studies have, however, shown that the saliva counts reflect the number of teeth colonized by the bacteria. A high saliva count (Strip class 3) indicates that most, or 80-90 per cent of the tooth surfaces, are carrying mutans streptococci. Strip class 1 or lower means that about 10 per cent of the surfaces or less have mutans streptococci. Data from various countries for 12-year-olds have shown that the proportion of the children having very low levels of mutans (Strip class 0) may vary from less than 10 up to 30 per cent, while high counts have been recorded for 10 to 50% of population. The results of the present survey (Table 5) may thus be looked upon as fairly "normal", as they fall within these ranges. Regarding the association with caries, our data are also in agreement with many studies, showing about three times more caries for high mutans children compared to the low mutans group. Certainly, individual differences from these mean values can be found, which is natural considering the multifactorial character of the caries disease.

Nevertheless, the association of these bacterias with caries was evident both in the urban and the rural sample. In conclusion, important pieces of information from this study are that 1) 75% of the children are affected by caries and in the majority of these cases, the number of affected surfaces is low; (2) more than 80% of lesions/fillings are confined to occlusal surfaces; (3) more than 80% of the children are carrying mutans streptococci; (4) the resources for conservative treatment are scarce. We conclude that general preventive programmes, focusing on the fissure caries problem, are urgently needed in this age group. To confirm if there is general caries increase in Sri Lanka, as may be possible seen from our results, a larger sample must be studied. An extensive follow-up study in Sri Lanka seems indicated.

Acknowledgments

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Table 1. DMFS and DMFT values for the total sample and for the different areas and schools respectively.

	SURFACES				TEETH				NUMBER OF CHILD.
	D	M	F	DMFS	D	M	F	DMFT	
Total sample	2.41	0.28	0.52	3.22	1.96	0.06	0.39	2.41	370
Urban area: (Colombo cit Lumbini (Boys))	1.47	0.28		3.22	1.28	0.04	0.56	1.88	200
Visaka (Girls)	1.59	0.4	0.96	2.95	1.37	0.08	0.77	2.22	100
Rural area: (Yadyadana and Dharmapala)	1.35	0.0	0.5	1.85	1.19	0.00	0.35	1.54	100
Boys	3.52	0.38	0.28	4.19	2.77	0.08	0.19	3.04	170
Girls	3.67	0.36	0.23	3.95	2.76	0.07	0.14	2.98	84
	3.67	0.41	0.21	4.42	2.78	0.08	0.23	3.09	86

Table 2. Distribution of children according to DMFT for the totla sample

DMFT	NO. OF CHILDREN	PERCENT
0	93	25.14
1	67	18.11
2	47	12.70
3	46	12
4	58	15.68
5	31	8.38
6	9	2.43
7	6	1.62
8	9	2.43
9	2	0.54
10	2	0.54
11	0	0
TOTAL	370	100%

Table 3. Number of teeth, unerupted teeth and remaining primary teeth Per cent of total Df surfaces present as occlusal caries.

	Total	Urban	Rural
Number of permanent teeth	25.29	25.23	25.36
Number of unerupted * permanent teeth (WHO Code 8)			
Maxilla	2.78	2.79	2.77
Mandible	2.71	2.76	2.65
(* including 18, 28,39,48)			
Number of remaining primary teeth			
Mixilla	0.70	0.73	0.66
Mandible	0.52	0.49	0.55
% of total DF present as occlusal cavities or filling (DF) (molars/premolars)			
	83.18	78.99	86.24

Table 4, DMFT and DFT in relation to number of permanent teeth.

Number of Permanent teeth	% of material	DMFT	DFT
< 23	19.46	1.39	1.38
<25	25.95	1.33	1.30
<22	80.54	2.66	2.59
<24	74.05	2.79	2.72
Total group (N=370)	100	2.41	2.35

Table 5. Per cent distribution of children in different Strip mutans classes and the corresponding DMFT values for the total sample and for the different schools.

	PERCENT				DEFT				
	STRIPMUTANS				STRIPMUTANS				
	0	1	2	3	0	1	2	3	N
Total sample	16*+	20	35	29	0.98	1.67	2.68	3.38	370
City of Colombo:									
Lumbini and Visakha	17	23	37	23	0.56	1.48	2.43	2.37	200
Rural area									
Vidyadanaand Dharmapala	14	17	33	36	1.58	1.97	3.00	4.15	170

* Value indicates that 16 per cent of the total sample belonged to Strip mutans class 0, etc.

+ The distribution of mutans streptococi in the group of children with <23 permanent teeth (72 individuals) was: Strip class 0: 20%; Strip class 2: 31%, Strip class 3: 28%.

Table 6. Frequency distribution of children for different DMFT - Strip mutans class combination.

DMFT	STRIP MUTANS CLASS				TOTAL
	0	1	2	3	
0	31*	23	25	14	93
1 - 2	18	35	35	26	114
3 - 4	7	11	50	36	104
5	2	6	22	31	59
TOTAL	58	75	130	107	370

Chi square P-value < 0.0001

* Figures represent number of children

DMFT values in relation to Strip mutans class for the total material.

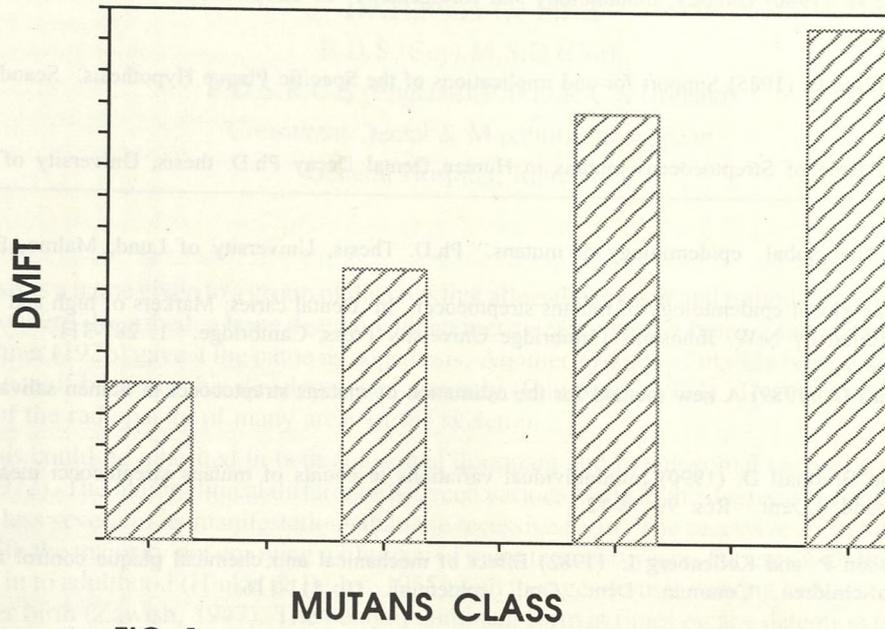


FIG 1.

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OSTEOPETROSIS; A CASE REPORT

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Introduction

Osteopetrosis is a name given to a group of diseases that affect the growth and remodelling of bone. In 1904, Albers-Schonberg described a bone disease with an increase in compact bone at the expenses of medullary bone. Karshner (1926) gave it the name osteopetrosis. Another synonym "marble bone disease" is based on the appearance of bones in this developmental anomaly (Enticknap, 1954). The name provides a succinct description of the radiopacity of many areas of the skeleton.

Osteopetrosis could be inherited in both autosomal dominant and in autosomal recessive manner (Dick & Simpson, 1972). The major clinical difference between various forms is the degree of severity, the dominant form being less severe in its manifestations than the recessive form. The recessive form has an onset at an early age with the majority not enjoying a life span of more than two years. Patients with the dominant form can survive in to adulthood (Hinkel & Beiler, 1955) with the age of onset varying between intra-uterine life to years after birth (Zawish, 1947). The benign, dominant form at times escape detection until middle age.

Most bones of the skeleton are involved by the diffuse sclerotic process both forms of the disease. However in both forms, there may be less severe and less extensive involvement. The majority of the patients suffering from the recessive severe form presents with optic atrophy, hepatosplenomegaly, retarded growth, loss of hearing, facial palsy and pathological fractures. No known patient of this form of osteopetrosis has survived beyond the age of 20 years. Death usually occurs due to intercurrent infection and cardiac failure due to anaemia (Shafer et al, 1983). In the benign form of the disease almost 50 per cent of the patients are asymptomatic. Pathological fractures, osteomyelitis and cranial nerve palsies are the common clinical presentations.

Radiographically the bone affected in osteopetrosis are characterised by a diffuse, homogenous, symmetrically sclerotic appearance. The medullary cavities are replaced by bone and cortex is thickened. In the case of jaw bones, the density of bone such that the roots of the teeth are nearly invisible.

Case Report

S.A. a twenty four year old male from Welimada attended our clinic complaining of a painful swelling in the right hand side of his face. He had suffered a trivial blow to his face four weeks ago. The accident was followed by the appearance of a painful swelling which subsided within a week following treatment by a general practitioner. However the swelling reappeared three weeks later and had been resistant to drug therapy on this occasion.

He gave a history of a surgical operation to his right mandible to "cleanup the jaw following a post dental extraction infection" but the diagnosis card was missing. Apart from a recurrent headache and partial deafness in his left ear past medical history was uneventful.

On examination S.A. appeared a young adult of average built. A diffuse, brawny, warm, tender swelling overlaid the body of the right mandible in it's premolar-molar region, extending across the lower border to involve the ipsilateral submandibular region. His mouth opening was restricted to 7 mm of inter incisal clearance. Cranial nerves were clinically normal except for an area of anaesthesia over the right half of the lower lip and a conduction deafness in his left ear.

He was febrile with a pulse rate in excess of 100 per minute. Conjunctiva was pale. A hepatosplenomegaly was detected in physical examination.

He was admitted to our ward and was treated with intravenous penicillin and oral paracetamol. This regime settled his temperature to normal within 36 hours.

Radiography of the mandible revealed a non-union of a fracture in the 65 region, exhibiting eburnated bone ends and a moth eaten appearance suggestive of osteomyelitis (Fig 1). However the most striking feature was the relatively high density of the mandibular bone. We proceed to examine a radiograph of the skull which too demonstrated a dense radiopacity of the vault with absence of diploe (Fig 2) A skeletal survey was undertaken next and with the exception of the metacarpals the rest the skeleton displayed the same dense homogenous radiopacity with little or no medullary bone (Fig 3, 4 and 5). The rib cage exhibited a classical "cotton wool" opacity particularly at the costo-vertebral junction.

A low haemoglobin level (9.5 g/dl), low white cell count (4000/ml) low platelet count (130000/ml) and a blood film examination suggestive of normochromic, normocytic anaemia featured the laboratory findings. Serology for calcium and alkaline phosphatase was within normal limits.

The patient was transfused with two units of packed red cells to raise the haemoglobin level and an intermaxillary fixation with eyelet wires was carried out. However the fracture failed to unite and he had two episodes of infection during a period of six weeks on intermaxillary fixation.

At the conclusion of six weeks the fracture was explored surgically using an extra-oral submandibular approach. The eburnated bone ends were debrided and all seemingly non-vital bone was excised until bleeding bone was encountered. Wound closure was effected in multiple layers and the IMF was re-established. A naso-endotracheal tube was retained at recovery from anaesthesia to maintain the airway in the immediate post-operative period.

The tissue obtained from the fracture site at the operative was sent for histology which was reported to be compatible with a clinical diagnosis of osteopetrosis.

Post operative period was uneventful. Intermaxillary fixation was dismantled 8 weeks post-operatively when a good clinical and radiological union was confirmed.

The patient is now on a three monthly follow-up for the past eighteen months. He has been advised to avoid hard food items which are likely to cause trauma to the oral mucosa. He is also kept on a strict oral hygiene regime. On this he had been free of any recurrent osteomyelitis.

Discussion

Normal bone grows in orderly stage of laying down precursor elements, adding where stress or growth vectors indicate and removing excess bone through resorption (Aegerter & Kirkpatrick, 1975). This allows an orderly architecture with cortex and medulla to be established. In osteopetrosis, this does not occur. The resorption is defective most likely because of defective osteoclasts (Van Tran et al, 1985). Primitive bone and cartilage remains in sites interfering with the establishment of proper medullary canals and haemopoietic marrow (Pines & Lederer, 1947). The resulting bone is dense but brittle (Hasenhuttl, 1962).

The body's attempt at restoring the haemopoietic potential of the decreased marrow volume manifests as hepatosplenomegaly indicating extra medullary haemopoiesis. Anaemia and leukoplakia are important causes of death in osteopetrosis.

Overgrowth bone results in many neurological abnormalities. Compression neuropathy at the foramina of base of the skull may in cranial nerve palsies, facial pain, loss of vision and hearing.

Jaw anomalies are common in osteopetrosis. An excessively enlarged mandible has been reported (Winter, 1945; Montgomery & Standard, 1960). Dick and Simpson (1972) reported a patient with a cleft palate. However Cohen (1978) does not include osteopetrosis in the list of syndromes associated with cleft palate deformity. Several dental anomalies have been reported from early loss of teeth, absence of teeth, obliteration of pulp chambers and shortening of roots. Many authorities recognise a significant risk of developing osteomyelitis following odontogenic infection or tooth extraction (Fairbank, 1948; Gupta, 1986).

Healing properties of the bone is impeded in osteopetrosis as a result of bone perfusion and due to lack of medullary cancellous bone. Anaemia due to non-availability of marrow contributes to some. Brittle bone in osteopetrosis is therefore easy to fracture but heals only with difficulty.

Surgery on bone affected with osteopetrosis should be effected with extra care. Periosteal stripping is not recommended as it may devoid the bone of it's only nutrient supply. Meticulous suturing aimed at ensuring good skin / mucosa coverage to bone is essential to prevent oral cutaneous micro-organism from gaining access to the diseased bone.

Osteopetrosis is not the only disease that may produce an increase in density of bone Among those needed to be considered in differential diagnosis are pyknodysostosis, Pyle's disease, diaphyseal dysplasia and fluoride poisoning (Hinkel & Beiler, 1955). The differential features of these are summarised in Table 1.

TABLE. 1

	Heredity	Anaemia	Nerve impingement	Cortices	Fracture	Cranial	Mandibular angle
OSTEOPETROSIS		Yes	Yes	Thick	Yes		Obtuse
PYKNODYSTOSIS (AD)	(AD)	No Or		Thick	Yes	Open	Obtuse
CRANIO-METAPHYSEAL	AR AD?	minimal No	Yes	Thin	Yes		
DYSPLASIA DIAPHYSEAL	May be	Yes	Yes	Thick		Widened	
DYSPLASIA FLUOROSIS	NO	No	Pain	Sub Periosteal Thick	Few	Sclerotic	No change

1

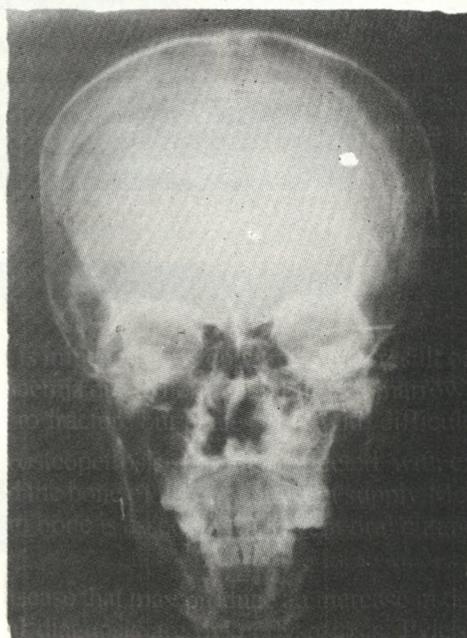


FIG 2

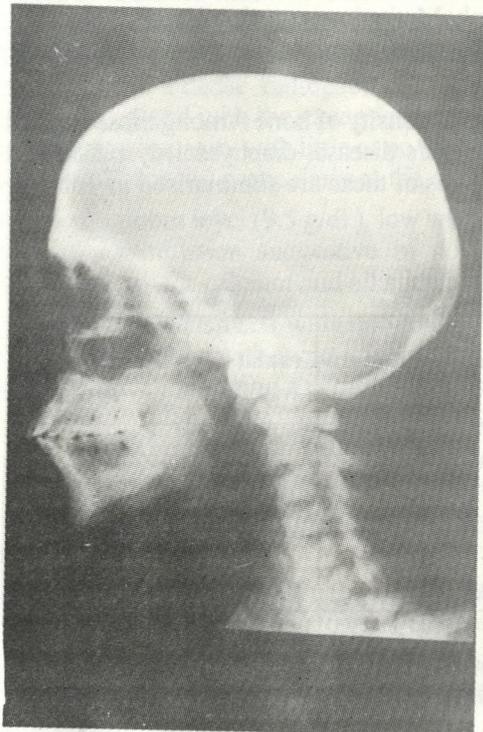


FIG 3

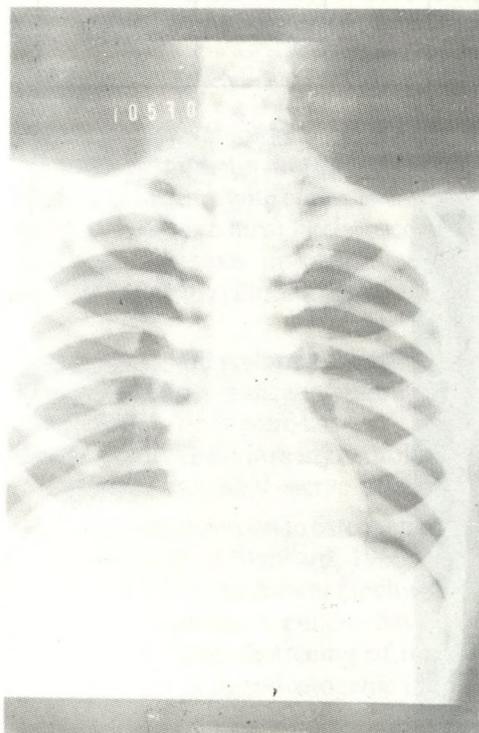


FIG 4



FIG 5

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Gingival Microbiology in Pregnancy Gingivitis.

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Introduction.

The gingival response of humans to an alteration in the balance of hormones is well known. These alterations are commonly seen during menarche, menstruation, pregnancy and menopause and in diseases such as diabetes mellitus. It is believed that pregnancy predisposes to gingivitis and in most the gingivitis decreases or disappears post partem. Very little research into pregnancy gingivitis has been done internationally and the only study in Sri Lanka has been a preliminary survey on pregnancy gingivitis. This study showed that 83 % of pregnant women in Sri Lanka suffer from mild to severe form of gingivitis. The following study has been done to investigate possible changes in the microbial flora in the gingiva of pregnant women with gingivitis, by culturing gingival swabs.

Criteria of selection and method.

Pregnant women attending the antenatal clinics of the Department of Obstetrics and Gynaecology, University of Colombo at the De Soysa Hospital for Women were selected according to the following criteria :

1. Women in the first and second pregnancies with at least twenty teeth in their mouth.
2. Only those without caries in 123 or adjacent teeth were included in the study.
3. Only 123 area of the gingiva was swabbed.
4. The subjects were not under medication, except, iron, folic acid and calcium tablets, which were given routinely during the ante-natal visits.
5. Those with den. res, abnormal dental arch relationships, with crowded teeth or obvious orthodontic problems and with plaque deposits were excluded.

According to the above criteria, 106 healthy pregnant women who had gingivitis were selected. Thirty nine pregnant women without gingivitis were selected by a similar process of elimination.

The gingival index of all women were noted using Loe-Silners Scale, which is the most widely used Index in therapeutic trials as this provides a more objective assessment of gingivitis.

Sterile cotton wool swabs prepared by Department of Microbiology, General Hospital, Colombo, were used. The labial surface of the attached, marginal and free gingivae of 123 area was swabbed by using light pressure. This area was chosen for convenience of accessibility and visibility. All swabs were transported and plated within two hours, at the Department of Microbiology, General Hospital, Colombo.

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MICROBIAL FLORA IN RELATION TO GINGIVAL INDICIES.

(First Pregnancy - P I.)

GINGIVAL INDICIES

Organism.

<u>AEROBES</u>	NO	%	NO	%	NO	%
<u>Single.</u>						
Streptococcus viridans (SV)	15	71.4%	26	56.5%	4	40%
Staphylococcus aureas St Q	2	9.5%	0		0	
Neisseria Pharyngitidis (Nph)	1	4.8%	0		0	
Percentage		85.7%		56.5%		40%
<u>MULTIPLE.</u>						
SV-St a	0		2	4.3%	2	20%
SV-Nph	2	9.5%	12	26.1%	1	10%
SV- Betahaemolytic Streptococci(BH S)	0-		3	6.5%	2	20%
SV + St a+ ,, ,, ,,	0-		1	2.2%	0	
Non haemlytic Streptococci (NHS)	0-		0		1	10%
No Bacterial Growth	1	4.7%	2	4.3%	0	
Total and Percentage	21	14.2%	40	43.4%	10	60%
<u>ANAEROBES.</u>						
<u>Single.</u>						
Veilonella - (V)	5	23.8%	4	8.7%	1	10%
Bacteroides melaninogenicus (Bm)	3-	14.3%	0		0	
Bacteroides (B)	5	23.8%	0		0	
Percentage		61.9%		8.7%		10%
<u>MULTIPLE.</u>						
V - Bn	2	9.5%	23	50%	6	60%
V - B	5	23.8%	13	28.3%	2	20%
V- Peptosreptococci (PStr)	0		3	6.5%	0	
V- B - PStr	0		2	4.3%	0	
V-Bm -PStr	-		1	2.2%	1	10%
No Bacterial Growth	1	4.7%	0		0	
Total and Percentage	21	38.0%	46	91.3%	10	90%

TABLE 2.

MICROBIAL FLORA IN RELATION TO GINGIVAL INDICIES.

SECOND PREGNANCY P 2.

ORGANISM.	GINGIVAL INDICIES								
	0		1		2				
AEROBES.	NO.	%	NO.	%	NO.	%			
Strep. V (SV)	8	-	44.4%	13	-	57.1%	5	-	26%
Stap A (St a)	0	-		0	-		2	-	10%
N . Pharyngis (Nph)	1	-	5.0%	0	-		10	-	52.6%
Percentage			49.4%			57.1%			89.1%
<u>Multiple.</u>									
SV + St a	3	-	16.7%	0	-		1	-	5.0%
SV + Nph	6	-	33.3%	6	-	33.3%	0	-	
St a + Nph	0	-		0	-		1	-	5.0%
SV + BHmS	0	-		2	-	9.5%	0	-	
SV + St a + BHmS	0	-		0	-		0	-	
NHm Strains	0	-		0	-		0	-	
No Growth	0	-		0	-		0	-	
Total and percentage	18	-	50%	21	-	42.8%	19	-	10%
<u>ANAEROBES</u>									
Single	NO.	%	NO.	%	NO.	%			
Veilonella (V)	3	-	16.6%	1	-	4.76%	1	-	5%
B. Melaninogenicus (Bm)	5	-	27.8%	1	-	4.76%	1	-	5%
Bacteroids (B)	0	-		0	-		0	-	
Peptostreptococcus (PS tr)	0	-		1	-	4.76%	3	-	15.7%
Percentage			44.4%			14.28%			25.7%
<u>Multiple.</u>									
V + Bm	1	-	5.0%	6	-	28.6%	1	-	5.3%
V + B	0	-		6	-	28.6%	1	-	5.3%
B + PStr	8	-	44.8%	0	-		4	-	21%
V + PStr	0	-		1	-	4.76%	6	-	32%
Bn + PStr	1	-	5.6%	1	-	4.76%	1	-	5.3%
V + PStr + B	0	-		4	-	19.0%	0	-	
V + PStr + Bn	0	-		0	-		1	-	5.3%
Total and Percentage	18	-	55.4%	21	-	85.7%	19	-	74.2%

Micro Biological Technique

Specimens collected on sterile swabs were inoculated on to two blood agar plates, (one incubated anaerobically and other aerobically) one with Mc Conkey agar (for aerobic incubation) and the other chocolate agar (incubated in 5-10% carbon dioxide). All incubations were at 37 degrees Centigrade for 24 hours.

The plates were examined daily during continuous incubation. Identification of the growth was done by observing colonial morphology, pigmentation, gram stain and other features described by Cowan and Steels' Manual for Identification of medical bacteria.

Results And Conclsions

The following tables show the prevalence of Aerobic and Anaerobic micro organisms in women with pregnancy gingivitis, and in those pregnant women without gingivitis.

Results

In the P.I Group (first pregnancy), it is observed that 85.7% of women without gingivitis had a single aerobic micro-organism in the gingiva as opposed to 56.5% and 40% of women with Indices of 1 and 2 respectively. In contrast only 14.2% of women gingivitis had more than one aerobic micro-organism in the gingiva, as opposed to 43.4% and 60% in the groups with Gingival Indices 1 and 2 respectively. The prevalence of single Anaerobic micro-organisms showed a similar pattern with 61.9%, 8.7% and 10% of the subjects in the Groups with Gingival indices of 0, 1 and 2 respectively while 38.0%, 91.3% and 90% of the subjects in the groups with Gingival Indices of 0, 1 and 2 respectively had more than one Anaerobic micro-organism in the Gingivae. In subjects in the second pregnancy (p 2) Table 2 a noteworthy observation is that the single aerobic organism gingivitis increased from 49.4% in pregnant women without gingivitis to 57.1% 89.1% in women with indices 1 and 2. This shows a marked increase in the organism infection of the aerobes in this group of women. This is opposite to the P 1 subjects where there was single aerobic infections and the percentage decreased from Index 1 to 2. As in P 1 group, the presence of a multiple group of anaerobes is seen to be higher in those with gingivitis than those without.

Conclusions

1. In the first pregnancy, the infestation of single Aerobes decreases with the increase of the Gingival Index. This is the converse in the , second pregnancy.
2. In the first pregnancy, the multiple aerobe infestation increases with the increase of gingival indicies. This is the converse in the second pregnancy.
3. The percentage of single anaerobic infestation decreases in the first pregnancy, but fluctuates in the second pregnancy.
4. The percentage of multiple anaerobic infestation increases both in the first and second pregnancies.
5. The reasonable conclusion therefore is that the presence of more than one species of anaerobic organism in the gingiva is associated with a higher prevalence of pregnancy gingivitis.

Acknowledgments

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UNCONTROLLED MAXILLARY SINUS INFECTION OF 23 YEARS DURATION

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Introduction

It is very uncommon for a maxillary lesion to produce recurrent intermittent trouble for over a 23 year period. Further, intense pain as a presenting feature of a chronic maxillary lesion is uncommon. This patient presented with both these features.

Case Report

A 37 yr old, Shri Lankan widow, a housewife, and mother of 3 children was referred to the department of oral pathology from Galle, Shri Lanka in December, 1990 for purpose of investigation for the complaint of continuous acute pain over the left maxilla. When seen in the Department of oral pathology the pain had been present for about 2 weeks. On talking to the patient (Table 1) it was soon evident that the patient had a 23 yr history of a swelling in relation to the left maxilla and a watery discharge from the left nostril of 7 yrs duration and also bleeding of one month duration. The discharge from the nose was aggravated while the patient attended to routine duties at home. Other associated complaints were: pain over the left palate in relation to the upper left second and third molar teeth and also pain over the alveolar side of left side of the neck. The history of the patient's complaint is given in table 1.

Past Medical History

The patient gave a positive history of allergy to foods like beef and pineapple. She also gave a history of surgical excision for a right breast lump in November 1981. She also gave a history of pericanalicular fibroadenoma and a total abdominal hysterectomy and right ovariectomy for a lump in the body of the uterus and ovarian cyst done in April, 1990.

Clinical Examination

The patient looked well. On extra oral examination the patient was pale. There was a slight depression over the left maxilla. There was also a slight deformity in the left nostril. There was no lymphadenopathy present at the time.

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Intra oral examination revealed a 2 cm x 2.5 cm non-tender, hard swelling on the left maxilla. There was both buccal and palatal expansion in relation to the upper left first, second and third molar region. The mucosa over the swelling was normal in colour and texture. The margins of the swelling were not well demarcated. Vitality tests showed that all the maxillary teeth present in the area were vital. The teeth present were 75432 123678 and 321 12348. There was no mobility or pain on percussion of any teeth. The lower left third molar was present and carious.

Special Investigations

1. The following radiographs were taken;

1.1 Intra oral periapical x-rays of

(a) |23 region, (b) |45 region, (c) |678 region,

1.2 Maxillary true occlusal x-ray

1.3 (a) Postero-anterior view of the skull

(b) Occipitomental x-ray of the skull.

Radiographic examination showed a radiopacity in relation to the left maxillary antrum. The inferior wall of the sinus was ill defined. The nasal septum was deviated to the right side. There was no periapical pathology present in relation to any tooth.

The postero anterior view of the skull (fig.1) showed a radiopacity in relation to the left maxillary antrum. This radiopacity was diffuse and extended from the medial wall of the antrum to its lateral wall. The lateral wall of the antrum was clearly demarcated and there was no bone erosion present. The inferior area of the antrum showed some radiopacity, but this radiopacity was ill defined. The postero-anterior view of the skull showed deviation of the nasal septum to the right side (Fig. 1). The occipitomental view also confirmed what was evident in the postero anterior radiograph. The left antrum was small in size, with shrunken walls and intact margins (Fig.2). The left true occlusal view of the maxilla (Fig.3) showed the presence of 123678 with 45 missing. The |3 shows some rarefaction in relation to the root apex of |3 but vitality tests indicated that the tooth was vital. The bone in relation to the palatal surfaces of |678 shows some irregularity and interplay of abnormal radiopacity and radiolucency. There was no evidence of cyst formation or bone loss due to tumor formation (Fig.3).

2. Analysis of nasal discharge:

Analysis of nasal discharge for CSF was negative.

Appearance :- blood stained serous fluid (supernatant-xanthochromic).

Protien 1000 mg%, cells P-46, L-08.

sugar 3.3 m.mols RBC > 1000/cm

(This was done in view of the suspicion of the ENT surgeon that the discharge may be CSF).

3. Swab And Culture Findings:

- 3.1 A curettage biopsy was obtained from the floor of the left maxillary antrum posterior to the /78 region. Part of this was sent to the medical research institute Colombo and the other part processed in the department of oral pathology.
- 3.2 2 swabs were obtained from the floor of the left maxillary antrum.
- 3.3 A nasal swab was also obtained.

The samples were sent to the medical research Institute Colombo for investigations for aerobic and anaerobic microorganisms. This was on account of 23 year history given by the patient.

The medical research institute. Colombo isolated an anaerobe (Clostridium) from the specimens from the left maxillary antrum. The antibiotic sensitivity test (ABST) was done. This organism was sensitive to co-trimoxazole and metronidazole and was resistant to augmentin. The aerobic cultures showed no growth of organisms.

Serology:

Laboratory studies of haemoglobin, were within normal limits. (blood picture, WBC/DC, platelets, ESR).

Histopathological Findings Of Curettage Biopsydone In 1991

Macroscopic findings : I soft tissue specimen 1.0 x 0.8 x 0.8 cm obtained from the posterior surface of the floor of the antrum in relation to the /78 region by an aseptic intraoral approach.

Microscopic findings : The section shows a connective tissue mass containing pseudostratified columnar ciliated epithelium with connective tissue, granulation tissue and minute spicules of bone. The connective tissue shows a dense chronic inflammatory cell infiltrate of the lymphocyte and plasma cell series. There is no evidence of dysplasia of the epithelium. Deeper down in the connective tissue there are more spicules of bone and also some nerve tissues cut both in longitudinal and transverse section. The histopathological findings are consistent with that of chronic non-specific maxillary sinusitis of the left maxilla.

Treatment

After the Antibiotic Sensitivity Test (ABST) given by the Medical Research Institute (MRI) in August 1991 treatment was initiated by the third author. Local treatment by way of oral hygiene instructions and tooth brushing instructions were given. This was followed by a thorough scaling and polishing.

Specific Treatment.

1. Co-trimoxazole (Bactrim, Septrin): (Sulphamethoxazole 5 parts and Trimethoprim 1 part) 960 mg every 12 hours for 2 weeks. This was followed by 480 mg for a further period of two weeks. Treatment was carried out for a period of one month. Constant monitoring was done for heamatological effects of the treatment. There was no drug rash.
2. Metronidazole 400 mg by mouth, 3 times daily (every 8 hours) after meals for a period of one month.
3. Drainage of the left antrum was done by intra-nasal antrostomy.
4. Antral mucosal decongesting agents were used by way of 1% Ephedrine Hydrochloride (1g/ 100 Nasal Drops, 3 times per day.
5. The patient was advised to take steam inhalation, once in the morning and once at night.

6. At the beginning of the treatment, the patient was put under moderate analgesics with suitable sedatives. At the end of this treatment procedure the patient's condition improved dramatically.

Follow up Observation

During the last 7 months from August 1991- March 1992 there has been no recurrence, of pain, swelling and discharge. The patient is under constant six monthly observation.

Discussion

It is very unusual for a middle aged woman to present to the dental surgeon with such intense pain in relation to the dentoalveolar structures of the left maxilla. This patient's complaint is characterized by intense, acute, constant pain in the left maxilla, not relieved by common analgesics and relieved only by the more potent analgesics and that too for a very short period of time. This presentation therefore is quite unlike that of acute pulpitis or chronic periodontitis. Besides, the vitality test indicated that all teeth in the left maxilla were vital. When a patient presents with this type of history one ought always to consider acute osteomyelitis in the differential diagnosis. Osteomyelitis is uncommon in the maxilla and the patient gives no history of any predisposing factors for osteomyelitis in the left maxilla. However, radiographic evidence of the left maxilla, both in postero anterior view (Fig.1) and occlusal view (Fig. 3) shows that the pathology is not one of massive bone destruction. However, at the time of presentation, on account of the very severe pain and the watery discharge and the prolonged history, it was felt that the patient would be having an infection of the antrum by a rare form of microorganism. Accordingly, facilities for anaerobic bacterial culture was sought from the department of Microbiology, Faculty of Medicine, University of Peradeniya and the General Hospital, Kandy and also from the Teaching Hospital, Peradeniya. In view of the fact that these facilities were not available in the central province of Shri Lanka, the patient's samples were sent by a special courier to the medical research institute Colombo for further investigation. It was not surprising that an anaerobic Clostridium was identified from the samples obtained from the left maxilla.

In the literature several bacteriological studies have been performed for infection in the maxillary sinuses (Axelsson, A. and Chidekel, N (1972), Jeppesen, F and Illum, P.(1972), Brorson, J.,E,Axelsson, A. and Holm, S.E. (1976), Chapnik, J.S and Bach, M.C (1976), Carenfelt, C. et al (1978)). These studies have shown that most maxillary sinus infections are caused by bacteria. In long standing non-responsive infections it is essential to culture the organisms aerobically as well as anaerobically from sinus washings or from nasal swabs (Eneroth and Lunberg 1976).In practice however, the results from the laboratory are often disappointing because anaerobic culture facilities are not always available.

Successful treatment of the maxillary sinusitis necessitates a thorough knowledge of the microbiology. The bacterial flora in maxillary sinusitis can be divided into two main groups (Table 2). Anaerobic infections of the maxillary sinus are usually found only in chronic sinus infections (Scott and Browns 1979). The occurrence of anaerobic bacteria has seldom been investigated with appropriate methods (Fredrick and Braude 1974). In chronic sinusitis many features of the diseased sinus tend to encourage anaerobic bacterial growth. Poor drainage due to the positions of the ostium and increase in the intrasinus pressure during inflammation results in decrease in the O₂ tension in the cavity by decreasing the mucosal blood flow. Pressure gradient between the maxillary sinus and the nasal passage are approximately 90 cm of water in chronic sinusitis as compared with 30 cm of water in acute sinusitis and rhinitis,also vasoconstrictive drugs and sprays produce increased ischaemia of the sinus mucosa. Chronic changes in the lining membrane produce viscid secretions which are not easily drained (Carenfelt and Lundburg 1978).

MacDonald and colleagues (1985) reported a case of botulinum associated with maxillary sinusitis and heavy intranasal cocaine abuse. Botulinum toxin type A was isolated from the serum, however, drainage from the affected maxillary sinus failed to grow clostridium botulinum and the actual source of infection was not clear. Another case (Kudrow et al 1988) is unique in that clostridium botulinum was isolated from a sinus aspirate taken during an acute neurological illness compatible with botulism strongly indicating the organism as a pathogen. In the anaerobic cultures of the present patient an anaerobic clostridium which is not among the common types of clostridia was identified as a pathogen at the Medical Research Institute, Colombo. Due to lack of facilities even at the MRI such as gas liquid chromatography techniques the subspecies of the clostridia has still not been identified. However, ABST was done. The patient responded well with Cotrimoxazole and Metronidazole and healing has been uneventful. There has been no recurrence or relapse from 1990. The pain has completely disappeared and the patient has been comfortable and well. This indicates that a correct diagnosis had been made and also that correct Antibiotics had been given for the infection after 23 years.

Acknowledgements.

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Fig. 1

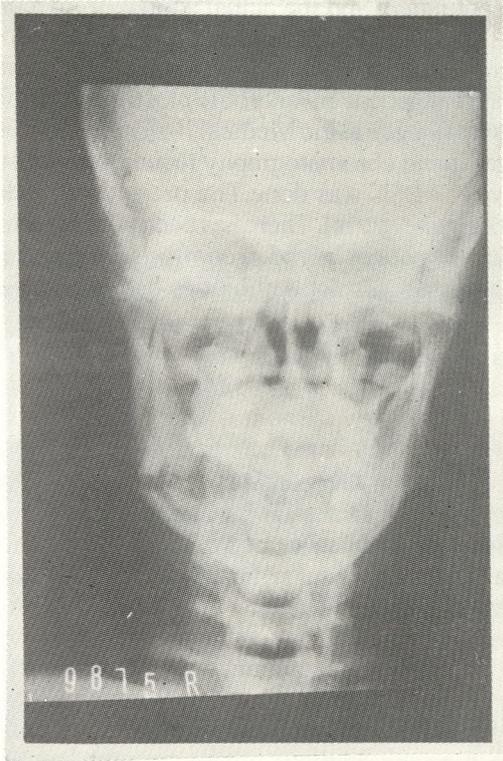
Postero anterior view of skull showing a radiopacity in relation to the left maxillary antrum.

Fig. 2

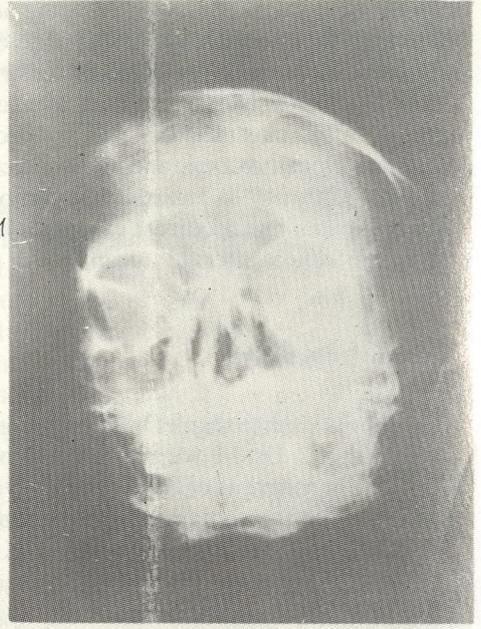
The occipitomental view showing a small antrum with shrunken walls and intact margins.

Fig. 3

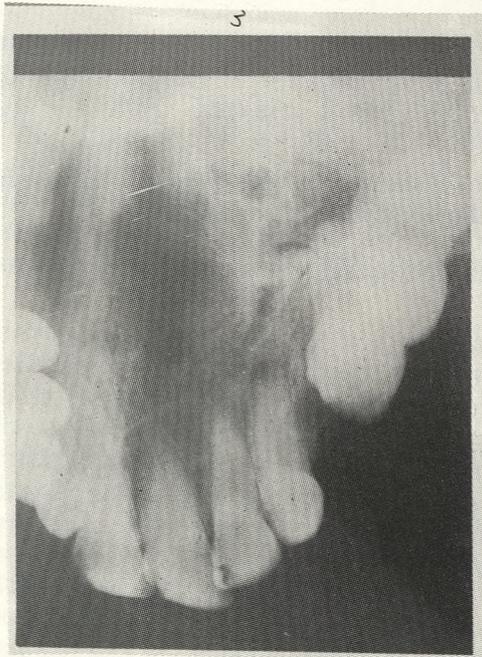
The left true occlusal view of the maxilla with /123678. The bone in relation to the palatal surface of /678 shows some irregular radiolucency and radiopacity.



1



2



3

TABLE 1
Patient's history form 1969 - 1991

Year (age of the patient in years)	Chief complaint	Place where treatment was done and nature of treatment	Clinical diagnosis and histopathological diagnosis
1969 (15)	Stuffy nose, pain and swelling of left maxilla	General Hospital, Gale. Biopsy	Crstic growth of maxilla eroding into the palate.
1969 (15)	Two recurrences in one month	Singapore Center Hospital (ENT Dept.) Left Caldwell Iuc operation	
1973 (19)	Recurrence	General Hospital, Colombo. Biopsy	The biopsy is small satisfactory for reporting. Chronic non-specified squamous epithelium. The possibility of mucoepidermoid carcinoma of salivary gland orgin had been considered.
1984 (30)	Stuffy nose, pain & swelling of left maxilla and watery discharge from left nostril	General Hospital (Ent Dept) Left caldwell luc operation	Purulent left rhinorrhoea and left maxillary sinusitis. Indicated chronic inflammatory change of maxillary antrum
	Recurrence	General Hospital, Gall, Antral biopsy	Specimen unsatisfactory for firm diagnosis
1989 (35)	Recurrence	General Hospital, Colombo. (ENT Clinic)	
1989 (35)	Recurrence	Dental Institute, Colombo	
1989 (35)			

TABLE 2
The bacterial flora of maxillary sinusitis
(From various sources of the literature Ref. 1, 2, 3, 5, 8)

Aerobic	Anerobic
<u>Gram Positive cocci and bacilli</u>	<u>Gram positive cocci and bacilli</u>
1. Pneumococcus diplococcus pneumoniae	1. Pepto streptococcus
2. Streptococcus Alfa -haemolytic Beta-haemolytic	2. anaerobic streptococcus
Non haemolytic Streptococcus pneumoniae	3. Anerobic pneumococci
3. Staphylococcus aureus Staphylococcus albus	4. Anaerobic diptheroids
4. Enterococci	5. Clostridia
5. Haemophilus influenza Capsular type A rare type C	
6. Corynebacterium diptheriae	
7. Bacillus Pfeiffer Friedlander	
8. Actinomyces	
9. Norcardia	
<u>Gram Negative cocci and bacilli</u>	<u>Gram Negative cocci and bacilli</u>
1. Neisseria species	1. veillonella
2. E. coli	2. bacteroids
3. Proteus mirabilis	3. fusiforms
4. Pseudomas	4. Anaerobic pseudomonas
5. Enterobacter cloacae	5. anaerobic gram negative rods.

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Sydney William Garne-Founder President of Ceylon Dental Association and the History of the Association

by **Dr. H. W.M. Cooray**

B. D. S. (Cey). M. C. G. D. P. (Sri Lanka)

The Sri Lanka Dental Association celebrated its 60 th anniversary on 6 th December 1992. Anniversaries of any kind are historical events and it would be fitting on an occasion like this to recapitulate some of its history.

The Ceylon Dental Association as it was then known was established in 1932, at a time, when the Dental Profession was in its formative years. The Dentists at that time were mostly graduates from British Universities of London, Edinburgh or Glasgow. Almost all of them were medical graduates who had done dentistry as a speciality.

Sydney William Garne was a dentist with the qualification L.D.S. (Edin) who was in General Dental practice in Colombo. He along with eleven other dentists formed the Ceylon Dental Association on 6th of December 1932. The other founder members were Annesley Gomes, Honorary Secretary, Eric Swan, J.S.R Goonawardena, Sperling Christoffelsz, S.L Cramer, W. Balendra, V. Sinnatamby, C.A.R. Goonawardena, E.P.N. Abeyesundara, A.E. Daviot and M.A.B Brito Muthunayagam. According to the forward written by the founder President Sydney William Garne in the constitution of the Association, the British Dental Association's rules and regulations were adopted by the Ceylon Dental Association temporarily until it was able to modify and adopt them to suit the local professional environment. The Ceylon Dental Association was, at the time affiliated to the British Dental Association.

Sydney William Garne, the founder President of the Ceylon Dental Association was born in 1875 to Henry Fredrick Garne (1848-1898) and Caroline Bowler of Egham, Surrey, in England. Henry Garne had been running a "Fancy Repository" (shop) in the high street of Egham. In 1885 he had his private dwelling in Egham according to the records maintained by the local library. Sydney William Garne qualified as a dentist in 1898 having obtained the L.D.S.R.C.S from Royal Dental Hospital in London. He had registered himself with the General Medical Council on 15 th May 1901 though he qualified in 1898. It is in this year that his father died.

It is believed that he managed his father's shop for two years before commencing dental practice. In 1914, he is listed as being in practice at Johannesburg, Transvaal South Africa. By 1905 he had moved his practice to 15, Clarence Street, Staines, England. In 1909 his address in the British register was " Le Lovelly" Egham, Surrey, and also Bristol Hotel, Colombo. In the dentist's register of the Ceylon Medical Council he is registered as a dentist entitled to practice in Ceylon on 29 th January 1916 and the address was Bristol Hotel, Colombo. For historical records it must be stated that Sydney William Garne is the first dentist to have been registered here who had dental qualifications only. The other dentists registered up to then, had been with medical qualifications in addition to their dental qualifications. By 1924 he had moved his practice to Grand Oriental Hotel, Colombo.

The day 6 th December 1932 is a land mark in the annals of history of dentistry in Sri Lanka. On this day twelve members of the dental profession got together and formed the Ceylon Dental Association. Sydney William Garne was elected the founder president of the newly formed professional association. The Secretary was Annesley Gomes. In the forward to the Constitution of the Ceylon Dental Association written by Sydney Garne, he has stated that they had based it on the model of the British Dental Association, and has acknowledged the fact that the Constitution of the Ceylon Dental Association is similar to the Constitution of the British Dental Association. Sydney William Garne had written his last will no. 1104 dated 25 th October 1944 and attested by Messrs Julius & Creasy, Solicitors & Proctors, in which his practice address is 45, Galle Face Court, Colombo. He died on 25 th October 1946. He was survived by his wife Agnas Bessie Garne nee Clapp and had no children. His practice was sold to William Hugh Burndred, Dental Surgeon of Colombo for a sum of three thousand pounds sterling by his wife on 16 th November 1946, on the agreement of sale executed by Julius & Creasy, Solicitors, Proctors and Notaries public of Colombo.

Later this practice changed hands many times but was functioning up to 1973 when it was finally dismantled and sold. Sydney has demonstrated his background of a business family by his interest in investments made in fourteen companies operating during that time. Among them were Colombo Hotels Co.Ltd., Brown & Co. Ltd., Colombo Apothecaries Co. Ltd., Kelani Valley Rubber Co. Ltd., Swadeshi Industrial Works Ltd., and many others.

Arthur Annesley Gomes was the founder Secretary who held this post for thirteen years and was then Vice President and President for 2 years. In addition to his services to the association he was chiefly instrumental in having the Dental School established. He was elected the first honorary life member of the association on 23rd February 1950 in recognition of his invaluable services to the association.

M. A. B. Brito Muthunayagam was a founder member and the Treasurer of the new association. He was in General Dental Practice, and later he was appointed the Professor of Prosthetic Dentistry. An Oration has been established in his honour in recognition of his services to the profession.

Henry Sperling Christoffelsz another founder member goes down in history as the first qualified dentist to be registered in Ceylon on 15th May 1915 with the qualifications L.R.C.P., M.R.C.S. (Eng) and L.D.S. (Edin). Two other founder members registered in 1915 were Stephen Rodrigo Goonewardene who was the dental representative in the Ceylon Medical Council and Eric Swan the Vice President both of whom had the medical qualification as well as dental qualification from U.K.

A brief outline of the History of the Association

Registration of Dentists at this time was regulated by the Dental Registration Ordinance, which was based on the Dentists Act of 1878 of the United Kingdom. With the creation of the Dental Board of the United Kingdom in 1921 the registration procedure here fell in line with this ordinance. Dentists who had licences to practice certificates from the Dental Board of United Kingdom were registered in Ceylon.

In 1927 the Dental Registration Ordinance was amended making it a punishable offence for unregistered personal to practice dentistry and provision was made for the granting of licences to persons with an apprenticeship or an examination conducted by the Ceylon Medical Council. The Dentists Registration Ordinance was amended in 1933 which made the title "Dental Surgeon" to be used only by those having recognised qualification granted by the University.

In 1933 Annesley Gomes initiated through the Ceylon Dental Association a proposal to establish a Dental School. In February 1938 the Dental school was started as the Ceylon Dental Hospital and School at the dental Institute, Ward Place, Colombo. It was affiliated to the Ceylon Medical College sharing its facilities and staff. The first batch of six student were medically qualified and enrolled for a two year course leading to the licentiate in Dental Surgery.

In 1938, some European Dental Surgeons who were political refugees began to register and practice here. In fact few had registered and were in practice before the matter was brought to the notice of the Ceylon Branch of British Medical Association. At a combined meeting of the Ceylon Medical Association and the Ceylon Dental Association, S.L. Cramer, founder member proposed and Dr. E.M Wijerama of Ceylon Medical Association seconded that Nationals of Countries that do not recognise our qualification should not be registered as dentists in our country.

This resolution was passed and a sub-committee consisting of Drs. John Blaze, Frank Gunasekera, J.S.R. Goonewardena, S.L. Cramer and E.M. Wijerama was appointed to make written and Oral Representation to the Minister of Health. Representations were successful and no more non nationals have been registered. Among the Dental Surgeons already registered were Rudold Weiner and Paul Albeysheyn from Munich. They had established General Dental Practices in Colombo and Kandy respectively.

Meanwhile during the years of the Second World War, teaching was disorganised. In 1943, the Dental School was made a Department of the Faculty of Medicine of the University of Ceylon. Five students were enrolled for this new four year course, leading to Licentiate in Dental Surgery and Bachelor of Dental Surgery. With the availability of fully qualified dental graduates, the practice of registering unqualified dentists ceased when the Ordinance was repealed by section 7 (3) of the Amendment Act 27 of 1949. Yet the unqualified practitioners made several attempts to get into the register. They almost succeeded but for the resistance from the active and alert Ceylon Dental Association. Annesley Gomes was made the first Honorary life Member of the Association in 1950 in recognition of his services to the field of Dental Education.

The name of the association was changed to Sri Lanka Dental Association in 1974 following the change of the name of the country from Ceylon to Sri Lanka. The association initiated the Publication of their Sri Lanka Dental Journal in 1970 and it has been printed almost annually up to now. The Association's Library commenced in 1978. The S.L.D.A did not have an office of its own for the greater part of its existence. The Association moved into its own office at the Organisation of Professional Associations building, in their Golden Jubilee year in 1982. During this year its first International Congress was held. The Sri Lanka Dental Association's Oration was started in 1985. The branch associations for the activities of the members of the provinces commenced with the establishment of a branch in Kandy in 1986 followed by Galle and the North Western Province.

The S.L.D.A is the principal forum for presentation of academic papers and lectures. The Association invites visiting authorities from abroad to lecture to our Dental Surgeons. The highlight of the year's academic calendar is the annual scientific sessions which have been held regularly during the past ten years. This affords an opportunity for local scientists to present their research for discussion.

In the field of International Dental Affairs the association is a member of Federation Dentaire Internationale, Asian Pacific Dental Federation, Commonwealth Dental Association and South Asian Dental Associations' Federation. Sri Lanka Dental Association has been awarded the privilege of hosting the 19th Asian Pacific Dental Congress in Colombo in the year 1997.

The Association represents the Profession of the country. Our members are a very active group of professionals, who are nationally and internationally recognised. Our membership is drawn from all sections of Dental Practice namely the state sector, private sector, the armed services and the University.

The Association is ripening with age but paradoxically the profession is getting younger due to the increased numbers graduating in recent years. The resulting combination of maturity and wisdom of the older with dynamism of the younger should augur well for the profession in shouldering its share of the task to provide "Oral Health for all by the year 2000".

References :-

- (1) Ceylon Medical Council-Dentists Register
- (2) Royal College of Surgeons, England-Dentists Register
- (3) Records at Public Library of Egham
- (4) Last will of Sydney William Garne
- (5) Mr. Harry Green of Avon- for the family details by his personal communications
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A PROFILE OF THE DENTAL SERVICES IN SRI LANKA-DECEMBER 1992.

By - Dr. (Mrs) Siromani Abayaratna B.D.S. ,H.D.D.(Sri Lanka),D.P.H.D (Sydney)

Director Dental Services. Ministry of Health & Women Affairs

Country Analysis

Sri Lanka has a population of 17.6 million (mid year estimate for 1992). Of this, 78% are rural and 22% urban. The population pyramid is triangular with a broad base, indicating a large, young population. i.e.35% below the age of 15 years & 4% above 65 years. Of this 21% of the population falls within the age groups of 5 to 14 years during which period the children are treated by the School Dental Therapists too.

Epidemiology

Dental Caries :	DMF 6 yrs	4.4
	DMF 12 yrs	1.9
	DMF 35-44 yrs	9.2
Periodontal Disease :	12 yrs	88% bleeding
	35-44 yrs	95% bleeding
Edentulousness :	35-45 yrs	1.1
Dento Facial Anomalies :	12 yrs	18%
	35-44 yrs	4.2%

Sri Lanka is divided into 8 provinces and each province is further divided into 2 or 3 districts. Each district has a Regional Dental Surgeon who is virtually the Regional Director of Dental Services for the district and is responsible for planning, organising and implementing the services in his area.

In Sri Lanka, 80% of the dental services are provided to the public through the state sector and is free of charge. the rest of the services are provided by the General Dental Practitioners and a small percentage by "quacks" or unqualified persons. The state or Government Dental Officers are permitted to engage in private practice after working hours and approximately 75% of these officers make use of this privilege thus contributing to a further provision of services to the public.

Sri Lanka has 3 categories of trained Dental Personnel functioning within the Dental Services of the country. They are Dental Surgeons, Dental Therapists and Dental Technicians. Apart from these there are the Chairside Assistants who are not given any formal training but are trained "on the job".

Dental Surgeons :

Government Sector - 424

Other Government Sector (University, Armed services, etc.) - 41

General Dental Practice - 135

Unqualified - 92

Total Qualified - 600

Dentist : Population Ratio : 1 : 21.250 (for 75% of the population)

Other Demographic Information (Government Sector)

Male 52% Female 48%

Sinhalese 68% Tamil 26% Muslim 6%

Average work performance per day = 19 operations (n=315 from statistics collected for a week by questionnaire in Aug. 90) The providers of Dental Care by Province is shown in Table 1.

Within the Dental profession in the State Sector, there are 3 specialities and the number of Consultants in each are :

Oral and Maxillo - Facial Surgery - 13

Orthodontics - 1

Dental Public Health - 6

All these specialists are now trained in Sri Lanka at the Post Graduate Institute of Medicine where well-structured courses, leading to the Master of Surgery and Doctor of Medicine, have been formulated and are being conducted. These courses will be made available to foreign students from next year and to SAARC countries at a concessional rate.

School Dental Therapists

There are 466 School Dental Therapists distributed throughout the country and working in school-based clinics. There are 15 Supervising School Dental Therapists who are not engaged in clinical work, but assist the Regional Dental Surgeon in supervising, planning and organising the school services. The School Dental Therapist is an Operating auxiliary based on the New Zealand type and attending on children aged 3-13 years.

School Dental Therapists = 466

STD : Pop = 1 : 9120. (for 25% of the population)

Operator (Dental Surgeon + Therapist) : Pop = 1 : 15,725

Dental Technicians

There are 18 Dental Technicians in the state sector and may be another 60 who are unqualified and working privately. Some of these are Chinese technicians who have handed the skill and trade down the generations from father to son. The type of dentistry practiced by these technicians is appealing. They resort to unethical and unhealthy treatment procedures. It is a difficult task to get these services sufficiently organized unless and until a Dental Act is legislated in this country.

Distribution Of Services

The dental Services of Sri Lanka are built into the Medical Infrastructure and function efficiently and smoothly as a result.

Hospital Dental Clinics

There are 234 government, 9 adolescent and 135 full time and approximately 300 part time after hours private dental clinics distributed throughout the country. The government dental clinics are situated in Teaching, Provincial, General, Base and Rural Hospitals; in peripheral units; and in a few central dispensaries. The number of dental surgeons attached to these clinics range from 1-5. The consultants are placed in the Teaching and Provincial Hospitals. they have a senior House Officer and House Officer to assist them.

As in all developing countries, there is a tendency to drift towards the cities and specially the capital area. The distribution of Government Dental Surgeons and the manpower ratio by province is indicated in Diagram 1. Plans are already underway to open up more clinics in the less developed areas. However, until such time as these clinics are established, the dental surgeons provide services by "Reach out" clinics, planned in collaboration with Non Governmental Organisations. Transportable chairs and mobile dental vehicles are a necessity for such services.

School Dental Clinics

The school-based clinics too are distributed in an unequitable manner throughout the country. The School Dental Therapists perform "Outreach Clinics" on a programmed schedule. Here they transport the service to the children and specially the less fortunate who have no access to dental care. They spend three quarters of their time working in "outreach" situations. Because of this re-programming 60% of the children are now treated as compared to the 6% that benefitted from this service 5 years ago.

Dental Laboratories

There is a gross maldistribution of Dental Technicians in the country. 14 of the technicians are based in Colombo and 4 in the provinces. This is due to the fact that laboratories have not been developed and this service gets a very low order of priority. With the decentralisation of the Government health expenditure, Dental Laboratories for the bigger hospitals are furthest away when compared to Cardiac Intensive Care Units and X-ray facilities for the smaller rural hospitals.

Training

Dental surgeons

Trained at the faculty of Dental Science, University of Peradeniya. There is no systematic, meaningful or regular recruitment for this discipline. The decision to train Dental Surgeons is taken by the Higher Education Department without consultation with the Health Department. As a result, from 1993 there will be a big imbalance between the output of dental surgeons and the number that can be absorbed into the state sector. Approximately 75 students are being taken in annually to the faculty of Dental Science. The facilities for training too are grossly inadequate.

School Dental Therapists

Trained by the Government at the school for Dental Therapists, built by the Government of New Zealand under Colombo Plan Aid in 1955. They undergo a 2 year training course and 25 are trained per year. Upto date, 583 School Dental Therapists have been trained in the proficiency of child dental care at this school.

Dental Technicians

Undergo a 2 year training at the Faculty of Dental Science. It is envisaged that better dental services will be provided to the public, specially in the rural areas, after the decentralisation of functions to a smaller management unit, such as the Divisional Secretariat.

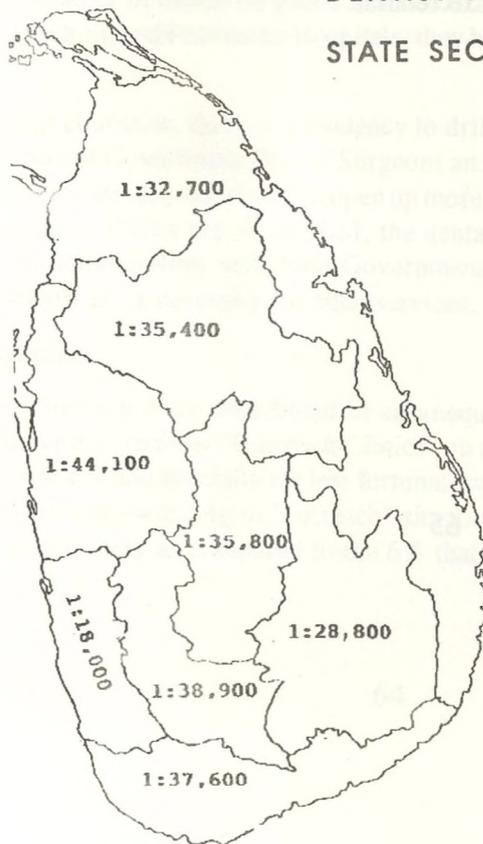
PROVIDERS OF DENTAL CARE

TABLE 1

PROVINCE	STATE	PRIVATE	UNQUALIFIED	TOTAL
Western	164	53	28	245
Central	40	21	08	69
Southern	40	12	12	67
North East	69	11	10	90
North Western	29	12	11	52
North Central	20	07	03	30
Uva	27	08	07	42
Sabaragamuwa	32	11	13	56
TOTAL	424	135	92	651

DIAGRAM 1

**DENTIST : POPULATION RATIO BY PROVINCE
STATE SECTOR DECEMBER 1992**



DE TREY CHEMFIL SUPERIOR	- GLASS IONOMER CEMENT
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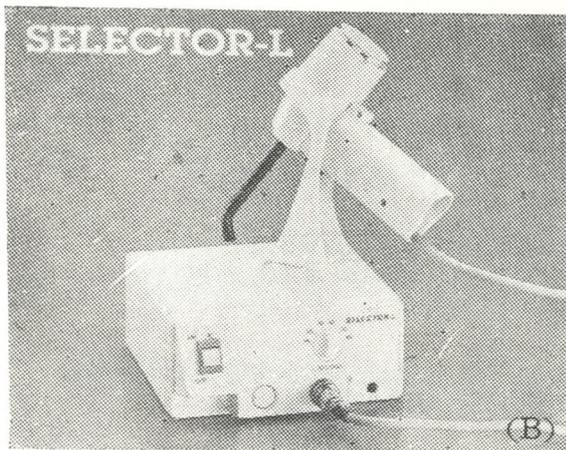
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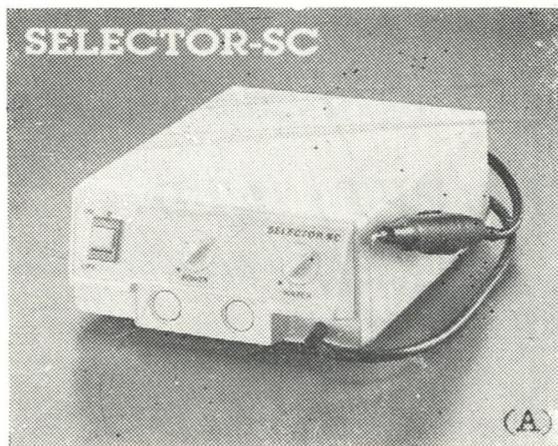


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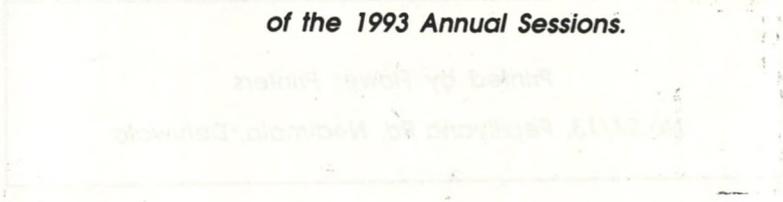
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*Sri Lanka Dental Association Sincerely, Thanks all who contributed towards the success
of the 1993 Annual Sessions.*



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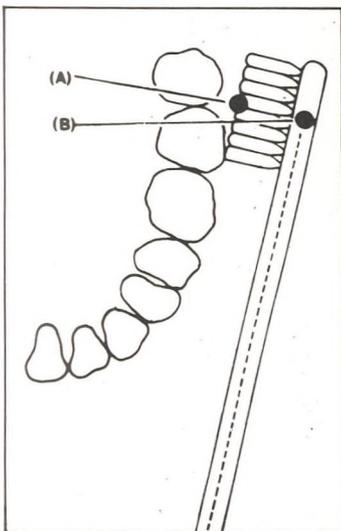
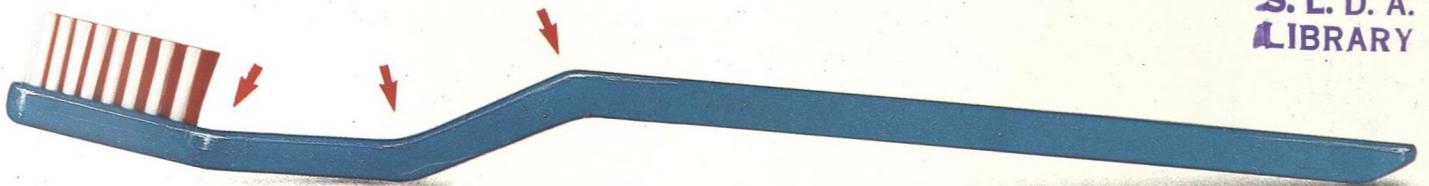
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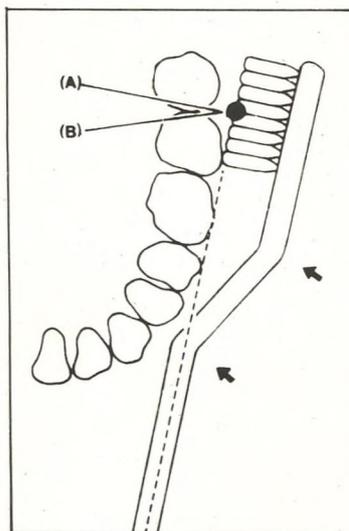
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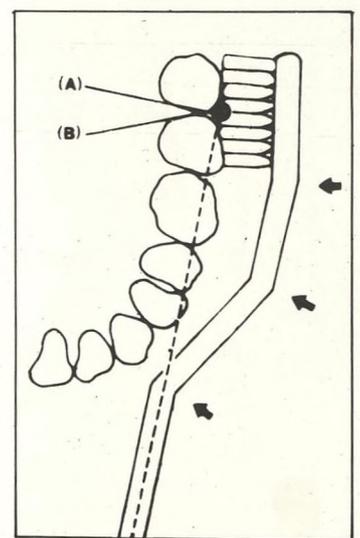
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