The removal of impacted third molars: Position of the South African Society for Maxillofacial and Oral Surgeons. (March 1999)

1. Introduction:

For 134 years Third molar surgery has been a controversial issue in International Maxillofacial and Oral Surgery as well as in the Dental Literature. The main areas of variation in practice relate to:

- removal vs. retention and observation of pathology free third molars.
- anaesthetic/analgesic/sedation modality.

2. Review of International Literature:

In the 1983 Journal of the American Dental Association (Volume 107) (4) Goldberg and Co-workers pointed out that since the 1950's there has been a gradual increase in the incidence of third molars becoming impacted. "It is quite apparent to general practitioners and specialists that impacted teeth are an increasingly common problem."

The rising standard of living associated with health education has created a demand for preventative care, including dental surgery. Especially in the time of fluoridation, teeth has been preserved what otherwise would have been lost because of tooth decay. The preservation of the first and second permanent molars makes impaction of third molars far more likely to occur.

In 1979 a Consensus Development Conference on removal of third molars was held at the National Institute of Dental Research,(National Institute of Health). (13) More than 200 practising dentists and scientists representing all disciplines within the profession met in an effort to reach general agreement on when and under what circumstances third molar extractions would be advised. They reached agreement on three issues:

1 "There are well-defined criteria for M3 removal: infection, non-restorable carious lesion, cyst, tumour, and destruction of adjacent bone and tooth."

2 "It was agreed that reduced morbidity resulted from extraction in younger patients than those did in advanced adulthood."

3 "Current predictive growthstudies were not sufficiently accurate to form a basis on which clinical action could be justified. **"**

In an article by Van der Linden et al (1993) (26) additional indications to the above were identified, namely:

- Lack of space in the posterior part of the alveolus.
- Pain of unknown aetiology.
- Pre-irradiation removals.
- When posterior retraction is considered during orthodontic treatment.(Bishara and Andreasen) (1)

Contra-indications for the removal of impacted third molars that should be considered (Van der Linden 1993) (26) :

- Possible damage to adjacent structures of an asymptomatic impacted tooth when the position is such that the removal adversely influences any adjacent structures.
- Compromised health status and age of the patient.
- Adequate space for eruption of the tooth.
- Abutment tooth.
- Orthodontic reasons – i.e. when first or second molars/premolars have been extracted.
- Transplantation of the third molar to extraction site of another molar.
- An unwilling patient should have his/her wishes respected.

Leading form the NIH Conference, numerous publications has seen the light on the topic of the evolution and development of impacted third molars, and still no definite consensus could be reached.

The pathological sequelae of neglected impacted third molars were studied by. Stanley and co-workers in 1988 and published in the Journal of Oral Pathology "The question remains however: is the 12% prevalence of pathologic conditions occurring in the population with an average age of 47 years (ranging from 20-83years) and an average impaction retention period of 27 years, significant enough to justify the removal of all totally impacted asymptomatic teeth?" (Stanley J.O.P 1988) (24)

Partial eruption of the mandibular third molar in a position close to or parallel with the slope of the accending ramus in an area lacking attached gingiva, results in a situation that is incompatible with tooth function or with oral hygiene. (Goldberg et al, 1983) (4).

Daniel M Laskin (1971) published an article stating :"of practical significance is the fact that recurrent Streptococcal infection have been implicated in the ethiology of both rheumatic fever and glomerulonephritis." (9)

A critical review of 149 published articles was done by Mercier and Precious in 1992. Comparison was made between the risks of non-intervention and the benefit of non-intervention. The risk of intervention and the benefit of intervention were also considered and all of this compared with each other. They came to the conclusion that **"The case of either the removal or retention of the asymptomatic third molar in many instances, appears not to be clear cut."**(12)

Bruce and co-workers (JADA 1980) (2) showed pericoronitis to be the most frequent reason (40%) for removal of impacted third molars in different age groups. The age incidence of pericoronitis occurs mainly between 20 and 29 years and very rarely over the age of 40 years.
Hendrix and Tall (1971) claim that well over 75% of all young adults with partially erupted or impacted third molars develop pericoronitis.(6)

Nitzan (1981) (14) stated that the source of the acute pericoronal infection, the tooth, must be removed. Stephens also concludes: "If a severe **primary** pericoronits has occurred, extraction is indicated unless the local anatomy can be improved by either the tooth achieving further eruption or by conservative management to control the local environment. Although no data are presented to suggest the efficiency of controlling the local environment." (25).

Goodsell (1977) (5) claimed that more second molars are lost due to third molars being left in place, than for any other reason.

Of interest are the conflicting opinions on the role impacted teeth have on crowding of teeth. Stephens in 1989 (25) stated "clearly the removal of erupting third molars to prevent crowding of lower incisors, lacks scientific support and cannot be used to justify preventative extraction". On the contrary, Lindquist (1982) (10) extracted third molars unilaterally and found decreased crowding on the extraction side, compared with the control side in 70% of cases. Richardson provided further evidence to support the implication of the presence of erupting third molars as **one** causative factor in lower arch crowding. (Richardson, American Journal Orthodontics (1984); Richardson, Angle Orthodontics (1977); Richardson International Journal Oral Surgery (1981); Richardson Angle Orthodontics (1985); Richardson, Angle Orthodontics (1987); Richardson American Journal Orthodontics and Dentofacial Orthopaedics 1989.) (16-20)

In an Editorial of the American Journal of Orthodontics and Dentofacial Orthopedics January 1999 (28) ,Dr M Richardson,(MA, MdentSc, DOrth) refers to six investigations where comparison of subjects with extracted second molars , with non-extraction subjects provides convincing evidence of the effect of third molars on the anterior part of the arch. "These findings, together with those based on third molar agenesis, and extraction studies, constitute a cumulative body of evidence to justify early removal of third molars that are developing in deficient space in cases where no other extractions are planned if this was a simple procedure".
Bishara and Andreasen came to the conclusion that there was no scientific basis for this assumption.(1) Controversy exists around the issue whether impacted teeth do cause crowding.
In 1994 Kahl and co-workers (7) published in the International Journal of Oral and Maxillofacial Surgery an article on the need for prophylactic removal of third molars in orthodontic cases. This study concluded "however, the findings of the present study show that pathologic changes related to long term retention of impacted third molars occur and therefore have to be considered at the last contact with a patient after orthodontic treatment".

In 1997, a team from the National Health Services Centre for reviews and Dissemination at the University of York in the United Kingdom set out to evaluate published reviews on the appropriateness of prophylactic removal of impacted third molars. This publication (23) based on second-hand interpretation of the original investigations and written by a team, only one of whom appears to hold a Dental qualification, concluded that the association between third molars" is not significant enough to warrant removing third molars for the prevention of incisor crowding."

Song and co-workers (1997) (23) makes a sweeping statement that: "In the absence of good evidence to support prophylactic removal there appears to be little justification for the removal of pathology free third molars." Statements such as these grant license to ignore third molars in the dental equation! Operator experience has been shown to have a direct influence on post-operative morbidity (Sisk et al 1986) (22)The advice of Song et al is that, the principle of preventive medicine should be ignored due to operator inexperience and especially financial restraints.

It should be noted that **asymptomatic** does **not** necessarily mean **pathology free**. A deep carious tooth can be asymptomatic but certainly not pathology free. Further more, it should be accepted that impacted teeth are classified by Shafer Hine and Levy as a Developmental Disturbance of the Oral and para-oral Structures (21), and is therefore a developmental pathological condition. A Pathology-free impacted tooth could then be considered as a contradiction in terms!

3. Medico legal aspects:

"All studies point out that, the younger the age of the patient when the teeth are extracted, the less morbidity there is."(Mercier and Precious 1992). (12)

"Clinical experience suggests that morbidity and serious complications may be reduced if impacted teeth are removed at an early age". (NIH Consensus Developmental Conference for removal of third molars 1979). (13)

Kugelberg (1990) (8) concluded that when the need for extraction can be foreseen, early removal of impacted third molars favours periodontal health of the adjacent second molars.
In the 1983 JADA volume 107,(4) Goldberg and his co-workers makes the point that ultraconservative surgical judgement during the patients youth, could perhaps be faulted if surgery were required during the patients productive years or concomitant with adult or geriatric diseases.

The SADJ Vol. 53 no 9 (3) reported on a tragedy that followed the removal of a wisdom tooth under general anaesthesia. A 62-year-old patient suffered brain damage after anaesthesia for the removal of a wisdom tooth. The question could be asked: "Would this have happened if the tooth was removed at the age of 22?"

The question arises: "When an impacted third molar is deliberately retained, and the removal of this tooth at an advanced age is done, with damage to the inferior alveolar nerve or any other complications arises, what would the medico legal position of this dentist/surgeon be?"

Many authors reach the same conclusion that, when an impacted third molar is deliberately retained, the patient should always be informed and the condition checked at regular intervals. The practical implications of regular reassessments can be cumbersome to the patient. Can it be justified to subject the patient to an ortho-pantomogram every 6 or 12 months for the rest of his/her life?

The South African Health Professionals Board published a document dealing with facts that could influence a practitioner's autonomy (15). The opening paragraph is quoted:

"The Forum of Statutory Health Councils holds the view that a practitioner should at all times act in the best interest of the patient and place the clinical needs of the patient paramount. **To this end a practitioner should always maintain professional autonomy independence, and commitment to the appropriate professional and ethical norms.** Any incentive or form of inducement which threatens such autonomy, independence or commitment to the appropriate professional and ethical norms, or which does not accord first priority to the clinical need of the patient, is unacceptable. The South African Society of Maxillofacial and Oral Surgeons also supports this view.

4. Position of the patient

As a member of a caring profession, a dentist/surgeon has a responsibility to put the interest of a patient first. The professional relationship between dentist/surgeon and patient relies on trust and the assumption that a dentist/surgeon will act in the best interest of the patient. A patient that seeks help/advice on his/her impacted third molars should be informed on all aspects of the problem.

The decision to remove or retain the impacted teeth must be made by the patient after being informed thoroughly and completely. Once the patient has made a decision in this regard, the patient should have his/her wish respected. It must be accepted that patient's attitudes, needs and demands do differ from each other. Are we always correct in our assessments of these factors? When he is entitled to this treatment according to the rules and conditions of this patient's medical aid scheme, a third party such as a dental advisor might infringe on this patients rights, should he refuse the treatment option the patient chose. The question can be asked whether a dental advisor are equipped with the necessary insight on the individual patient's needs and total situation? (See notes on Pain and Anxiety control)

5.1 Pain and Anxiety control.

Dentists/surgeons have a duty to provide, and patients have a right to expect, adequate and appropriate pain and anxiety control. This can be done by means of:

- Local anaesthesia
- Conscious Sedation in conjunction with local anaesthesia
- General Anaesthesia

The surgeon/dentist should choose the most appropriate and effective method for each patient. The patient's medical and dental history must be taken into account. Due regard should be given to all aspects of behavioural management and anxiety control before deciding what means of pain and anxiety control should be recommended.

The premises should also be appropriately equipped to manage and administer the chosen means of pain and anxiety control.,
To practice Conscious sedation the premises should at least be equipped with :

- O_2 Saturation monitor
- Blood pressure monitor
- Oxygen and ventilation apparatus(i.e. endotracheal tubes, laringoscope. ambubag
  ECG and defibrillator is also recommended)

Any practitioner rendering Conscious sedation without these minimum requirements, is liable to a charge of serious professional misconduct. The SASMFOS endorses the guidelines and requirements for Conscious sedation as being recommended by the Conscious sedation Group of South Africa. .

5.2 Protocol for the removal of impacted third molars:

Wide consultation throughout the country amongst academicians and numerous eminent private practitioners was undertaken and the response was clear that it is impossible to lay down absolute guidelines in this regard. The general consensus was that the execution of any surgical procedure is determined by specific clinical circumstances as **determined** by the attending clinician and patient. This is consistent with the opinion of Mercier and Precious, after doing a critical review of 149 articles.

Guidelines in the Literature:

(i)There is no controversy about the value of the removal of impacted third molars when they are associated with pathological changes. Disagreement exists about the appropriateness of removal of third molars unassociated with local pathology.(FDS of RCS [Eng] 1996) Surgical judgement is the key to quality care in the practice of oral surgery. (Goldberg 1983*) (4)*

(ii)The following comments are quoted form Mercier and Precious 1992 (12):

- "It appears that the best general approach to adopt when the surgeon is consulted for removal of unerupted third molars in growing individuals, is to remove on the basis of **clinical judgement**, some teeth before the age of 14, others before the age of 22, when chances of eruptions are minimal."
- **"It appears that, as yet, for many patients insufficient evidence excists to permit development of absolute indications and contra-indications for either deliberate retention or surgical removal of the impacted third molars."**
- **"The case of either the removal or retention of the asimptomatic third molar in many instances appear not be clear cut."**

(iii)"Although an impacted third molar occasionally may remain asymptomatic throughout a person's lifetime, clinical experience has shown that most of these teeth ultimately give rise to some difficulty. More over the damage produced by such complications frequently is not reversible even after the tooth has been extracted. On this basis, with few exceptions previously mentioned, it seems logical to recommend the prophylactic removal of third molars as soon as it is evident that they are not in a position to erupt normally," (Laskin 1971). (9)

Recommendation of the South African Society of Maxillofacial and Oral Surgeons:

(i)It is considered good practice , and in the interest of the patient, to remove an impacted third molar when the root is no more than 2/3 formed, when it is clear that a high probability of disease or pathology exists and when risks associated with early removal are less than the anticipated risks of later removal (I.e. increased morbidity) .. Two situations in which a high probability of consequential local disease is present are :

- When a vertical or disto-angular impacted tooth is at or close to the occlusal plane but the surface has been half or more covered for an extended period by soft tissue, pericoronitis is more likely (Nitzan 1985, Richardson 1992)
- When an impacted wisdom tooth is a mesio-angular or horizontal impaction, and it has a contact point at or close to the amelocemental junction of the second molar ,the risk of caries of the latter is increased, especially in the absence of a high standard of oral hygiene.(Board of FDS of RCS [Eng] 1996)

(ii)When a wisdom tooth is removed under GA, it is considered good practice to remove the other remaining impacted third molars, even if they are "pathology free". The increased risk of post-operative complications such as sensory nerve impairment should be considered. It is imperative that the patient should be informed, and the wishes of this patient must be respected!(FDS of RCS [Eng] 1996)(27)

(iii) In older individuals the **completely** embedded impacted wisdom tooth could well be left in situ and reassessed at regular intervals, to make sure that no pathological process is taking place (Lyttle 1979) (11)

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(iv) The choice of pain and anxiety control as well as anaestethia selection should be made jointly by the patient and the attending clinician. The latter will generally be the final arbiter taking into account the nature and extent of the procedure, state of the operative site, age health and demeanour of the patient.

6.Conclusion

Mercier and Precious (12): **"Ultimately, as in every treatment decision, the surgeon must way the facts and put the interest of the patient above all else. This is our professional responsibility."**

The arguments both for and against the prophylactic removal of impacted third molars are valid. In order to make a decision that is going to benefit the patient, the South African Society of Maxillo-Facial and Oral Surgeons recommends that each case should be assessed on its merits. The decision whether or not to remove the third molars, should take the overall benefit to the patient's oral status and general health into account. However the benefits of practising preventative medicine and dentistry are endorsed.

7 References

1. Bishara,SA & Andreasen, G (1983) Third Molars: A review. Am Jnl Orth.; 83,131-137
2. Bruce, RA, Fredrickson GC, Small ,GS, Age of patient and morbidity associated with mandibular third molar surgery. JADA 1980; 101:240-5
3. Clincal notes. Tragedy follows extraction of wisdom teeth under general anaestetic. SADJ; 53 No 9 p481
4. Goldberg ,MH The impacted third molar: referral patterns, patient compliance and surgical requirements. JADA; 107,Sept 1983 p.439-441
5. Goodsell.JF (1977) An overview of the third molar problem. Quintes.Intl, 10,11-18
6. Hendrix W & Tall, J. (1971) Reasons for removing third molars LA County USC Med Center.Presented Southern California Dent Assoc. May. (Quoted in Goodsell JF 1977)
7. Kahl B, Gerlach KL, Hilgers RD(1994) A long term follow up, radiographic evaluation of asymptomatic impacted third molars in orthodontically treated patients. Int J Oral Maxillofacial Surg1994;23:279-285.
8. Kugelberg, CF (1990) Periodontal Healing two and four years after impacted lower third molar surgery. Int Jnl Oral Maxillofac Surg 1990; 19:341-345
9. Laskin D, Evaluation of the Third Molar Problem. JADA, Vol 82, Apr 1971
10. Lindquist B, Extraction of third molars in cases of anticipated crowding of the lower jaw. Am Jnl Orthod 1982; 81:130-139
11. Lyttle JJ, (1979) Indications and contra – indications for removal of the impacted tooth. Dent.Clinics North America; 23: 333-346
12. Mercier P, Precious D, (1992) Risks and benefits of removal of third molars. A critical review of the literature. J. Oral Maxillofacial Surg. 1992; 21:17-27
13. NIH Consensus Development Conference for Removal of Third Molars. J Oral Surg 1980; 38: 235-236.
14. Nitzan D, Keren T, Marmary Y. Does an impacted tooth cause root resorption of the adjacent one ? Oral Surg 1981 ; 51:221-224
15. Proposed Policy Statement Pertaining To Perverse Incentives. 1998 Interim SAMDC Frikkie Olivierx265/svdm 2 September 1998.
16. Richardson ME Aetiology and prediction of mandibular third molar impaction. Angle Orth. 1977; 47: 165-172
17. Richardson ME , The development of third molar impaction and its prevention. Int J Oral Surg 1981 ; 10: Suppl I, 122-130.
18. Richardson ME, Lower molar crowding in the early permanent dentition. Angle Ort. 1985; 55: 51- 57.
19. Richardson ME , Lower third molar space. Angle Orth. 1987; 57: 155-161
20. Richardson ME , The role of the third molar in the cause of late lower arch crowding: a review. Am J Orthod. Dentofac> Orthop.1989; 95 :79-83.
21. Shafer WG , Hine MK, LevyBM. Atextbook of Oral Path. 1974 p97
22. Sisk et al Jnl Oral Maxillofac Surg 1986 ; 44: 855-859.
23. Song F, Landes DP ,, Glenny AM, Sheldon TA. The prophylactic removal of impacted third molars: an assessment of published reviews, Br Dent Jnl 1997; 182:339-346.

24. Stanley HR, Alattar M, Collett WK, Stringfellow HR Jr ,Spiegel EH. Pathological sequelae of "neglected" impacted third molars. Jnl Oral Path. 1988; 17: 113-117.
25. Stephens RG, Kogon SL , Reid JA, The unerupted or impacted third molar a critical appriasal of its pathologic potential JCDA 1989; 55: 201-207.
26 Van der Linden WJ, Lownie JF and Cleaton-Jones PE, Should impacted third molars be removed? A review of the literature . Jnl of the DASA,1993; 48 : 235-240.
27 FDS of RCS (Eng).Clinical Guidelines British Association of Oral&Maxillofacial Surgeons. London. In conjunction with the NHS Centre for reviews and Dissemination(CRD). Oct 1996
28 Richardson, M E. Prophylactic extraction of lower third molars: Setting the record straight. Am Jnl Othod. And Craniofacial Orthoped. Jan 1999.17A-18A

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