

An Audit of Mandibular Third Molar Surgery

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ABSTRACT

Background: The objective of this audit was to identify areas where there could be improvement in patient management as well as evaluating our methods of treatment and effective utilisation of resources.

Methods: A retrospective study of mandibular third surgery at the University of Benin Teaching Hospital, Benin City in one year.

Results: A total of 149 impacted mandibular third molars were surgically removed from 133 patients. There were 70 (47%) males and 79 (53%) females with an age range of 18 - 78 years. The commonest type of impaction was mesioangular 95 (63.8%). The commonest indication for surgery was pericoronitis 48 (32.2%). One hundred and twenty five (94%) of patients had local anaesthesia while 8 (6%) had local anaesthesia/intravenous. Four (2.7%) patients had paraesthesia of the lower lip as a result of inferior alveolar nerve damage while one (0.7%) had lingual nerve paraesthesia. No proper record keeping of procedures was observed in all the cases analysed.

Conclusion: This study has identified poor record keeping and non-adherence to standard protocol by residents in patient management.

KEYWORDS: Audit, Mandibular, Third Molar, Surgery

Introduction

Nowadays, clinical audit is becoming an essential tool for examining the quality of health care delivery. Simpson and Shaw have identified three important objectives of a medical audit 1) to improve the

quality of patients care 2) to increase the quality of training and education of clinical staff and 3) to permit an effective use of resources. ¹ Although oral and maxillofacial surgery is expanding its frontiers of practice, third molar surgery still remains the most commonly performed surgery

by the specialist surgeon.² Of the 284 surgical procedures carried out at our centre in 1999, 52.5% were impacted wisdom teeth. Quite often, the surgical removal of these teeth is attended by complications, which are distressing to the patients, and have been variously highlighted in previous reports.^{3 - 6} Of all the complications, sensory disturbance appears to be more prolonged and distressing to the patient and frequently results in litigation in some developed countries.

The authors undertook an audit of the technique and morbidity associated with the removal of impacted third molars in our centre. This was necessary to evaluate our methods of treatment, identify areas where there could be improvement in patient management as well as ascertain the effective use of resources.

Materials and Methods

In 1999, an audit of all surgically extracted mandibular third molars was undertaken at the Oral and Maxillofacial Surgery Clinic of the University of Benin Teaching Hospital, Benin, Nigeria. The case notes were obtained from the Medical Records Department and reviewed. The use of periapical radiographs to assess the relationship of roots and crowns to adjacent structures was noted. Furthermore, we noted the use of additional assessment based on WHARFE.⁷ The WHARFE assessment takes into account the angulation of

lower third molar(s) using Winter's classification (W), the height (H) of the mandible, angulation (A) of second molar, the shape and development of root (R), the size of the follicular sac (F) and the path of exit (E) of the tooth.

Surgical Procedure

All surgical procedures were carried out on a dental chair either under a local anaesthetic (L.A) agent or L.A/intravenous sedation with standard surgical protocols observed. The instruments used were the same in every case. A buccal mucoperiosteal flap extending to the external oblique ridge was raised in all cases with a vertical buccal relieving incision. Care was taken to avoid raising a lingual flap or using a retractor on the lingual tissues. Osteotomy of bone was performed using a round bur and where necessary tooth sectioning was carried out a fissure bur on a straight hand piece with constant irrigation using normal saline solution. A 3/0 black silk suture was used for closure of the wound and was removed after five days of surgery. All patients received oral antibiotics and non-steroidal anti-inflammatory analgesics (NSAIA) for a minimum of five days. Post-operative specific instructions on oral care were given to all the patients. They were also advised to report immediately to the hospital or the nearest clinic to patient if there was any untoward consequence of surgery.

Results

A total of 149 mandibular impacted third molars were surgically extracted from 133 consecutive patients who attended the Oral and Maxillofacial Surgery Clinic in 1999. There were 70 (47.0%) males and 79 (53.0%) females with an age range of 18 - 74 years (28 years). Of the 149 impacted third molars, 79 (53.0%) were on the left side of the jaw, while 70 (47.0%) were on the right side. Sixteen (12.0%) patients had bilateral impaction, while 117 (88.0%) had unilateral impaction. No patient with bilateral impaction had the two teeth removed at the same visit. There were more impactions (10 71.8%) within the 21- 30 years age range.

The commonest type of impaction was the mesioangular variety 95 (63.8%) and this was the most frequent among the females 47 (31.5%) aged range 21 - 30 years. This type of angulation was also the commonest among males 3 (20.8%) aged 21- 30 years (Table 1). The state of eruption of the teeth before surgery was not recorded.

The commonest recorded indications for surgery was unilateral pericoronitis 48 (32.2%), caries 44 (29.6%) and apical periodontitis 44 (29.6%) (Table 2) The commonest post-operative complaint was pain, 8 (5.4%) mostly from females 5(3.4%). Surgical removal of mesioangular and vertical impactions 3 (2.0%) respectively were more frequently involved in post-operative pain than any other type of impaction. Root fracture was

commonly associated with mesioangular impaction and this was encountered in 4(2.7%) patients.

One hundred and twenty five patients (94.0%) were administered local anaesthetic agent (lignocaine with 1:80,000 adrenaline). Eight patients (6.0%) had L.A with intravenous sedation. One hundred and forty (94.0%) third molars were extracted using burs and elevators while 9(6.0%) were extracted using chisel.

Acute alveolar osteitis (dry socket) was recorded in 3(2.0%) patients of age range 22 - 27 years. Of these, 2(1.3%) cases were associated with horizontal impaction, while the other was associated with a distoangular impaction. Paraesthesia of the lower lip associated with damage to the inferior alveolar nerve was observed in 4(2.7%) patients and was associated with horizontal impaction. There was one case (0.7%) of lingual nerve paraesthesia, which was associated with a horizontal impaction in a female patient. All cases of post-operative sensory disturbance recovered sensation within 3-8 weeks and no lingering paraesthesia or dysaesthesia was recorded. There was however, no pre-operative warning to patients of possible sensory deficit following surgery recorded.

Oral antibiotics and analgesics were routinely prescribed for the patients after surgery. No general anaesthesia, steroid and mouthwashes were used apart from hot salt mouthwash. The frequently prescribed analgesics were diclofenac 68 (45.6%), paracetamol 52 (34.0%),

Table 1: Distribution of Various Impactions and Age

Types of Impaction	18-20		21-30		31-40		41-50		51-60		61-70		71-80		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Mesiangular	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
	-	1(0.7)	31(20.8)	47(31.5)	7(4.6)	6(4.0)	1(0.7)	-	-	1(0.7)	-	-	1(0.7)	-	95(63.8)
Distoangular	-	-	5(3.4)	6(4.0)	3(2.0)	3(2.0)	-	-	1(0.7)	1(0.7)	-	-	-	-	19(12.8)
Horizontal	1(0.7)	1(0.7)	3(2.0)	5(3.4)	1(0.7)	2(1.3)	-	2(1.3)	-	-	-	-	-	-	15(10.0)
Vertical	-	-	3(2.0)	7(4.6)	-	1(0.7)	-	-	-	-	-	-	-	-	11(7.4)
Not recorded															9(6.0)

Piroxicam 27(18.1%), Ibuprofen, 2(1.3%) and pentazocine intramuscular injection in 3(2.0%) patients. Similarly, amoxycillin was the commonest single antibiotic prescribed 24(16.1%) and it was also the commonest prescribed antibiotic combined with metronidazole 58(38.9%) (Table 3). In all the cases, there were no prophylactic antibiotics given to any of the patients prior to surgery. Follow up review was arranged for all the patients until the sockets healed and where nerve damage had occurred, follow up was as long as three months.

Table 2: Reasons for Surgery

Indications for Surgery	No. (%)
Pericoronitis	48 (32.2)
Caries	44 (29.5)
Apical Periodontitis	44 (29.5)
Pulpitis	7 (4.7)
Fractured teeth	4 (2.7)
Alveolar abscess	2 (1.4)

Table 3: Antibiotics Commonly Prescribed

Antibiotics	No. (%)
Amoxycillin	24 (16.1)
Amoxycillin/metro-nidazole	58 (38.9)
Ampiclox	12 (8.1)
Ampiclox/metro-nidazole	22 (14.8)
Ampicillin	4 (2.7)
Ampicillin/metro-nidazole	10 (6.7)
Metronidazole	9 (6.0)
Erythromycin	9 (6.0)
Doxyclyne	1 (0.7)

Discussion

Most of the surgical extractions of impacted third molars carried out in our centre are done under local anaesthesia. This is because of patients' preference and the cost of using general anaesthesia for such a minor procedure. For instance, the cost of surgical extraction under local anaesthesia in our environment is about 20 Dollars whereas the same operation under general anaesthesia would attract more than twice this amount. Therefore, we found it more expedient and cost effective to use L.A for our patients especially in Nigeria where the average income is about 75 Dollars a month. However, there are some patients whose levels of anxiety are so high that they will consider treatment only under general anaesthesia. Such patients who were obviously nervous about operation were given the option of a general anaesthesia or local anaesthesia with intravenous sedation with the problems associated with either procedure fully explained to the patients. Less than 10 percent of patients preferred the use of L.A/intravenous sedation, which is consistent with findings elsewhere.^{6, 7,9} Although no patient in this audit was administered G.A before extraction, recent reports confirmed the regular use of G.A for lower third molar surgery in the United Kingdom.^{10,11} Previous work has identified the reason for

this, as a reflection of the fact that dental practitioners think third molar disease is more common than it really is.¹² Nonetheless, some centres in the U.K who had adopted this practice are reducing the number of third molars removal under G.A¹³ because of the high incidence of nerve damage.

The indications for surgery and post-operative complication are consistent with previous reports.³ It was observed that although periapical radiographs were taken to assess the teeth to be extracted, there were no records in all the case notes of the anatomical relationship of the tooth to the adjacent structures and the state of tooth eruption before surgery. Furthermore, the use of WHARFE in assessing surgical difficulty was not strictly adhered to in all procedures.

The incidence of inferior alveolar nerve damage was 2.7% and was frequently associated with horizontally impacted teeth. Although it is possible to predict inferior alveolar nerve damage by radiographic assessment,¹⁴ damage to this nerve still occurred and was also found more often with horizontally impacted teeth in other studies.^{6,15} The lingual paraesthesia observed in this audit was associated with a horizontal impaction and this was a similar finding in a West of Scotland study.⁶ This apparent low incidence of lingual nerve damage could be attributed to our method

of raising the buccal mucoperiosteal flap without raising the lingual flap-a method that has been claimed to present no risk to the lingual nerve¹⁶ and used by some clinicians¹⁷ to achieve a low incidence of lingual nerve paraesthesia.

The present audit indicates that antibiotics and analgesics were routinely prescribed post-operatively to most patients after third molar surgery regardless of their health status. This practice agrees with earlier reports,¹⁸ but while the commonest antibiotics found to be administered in this audit was amoxicillin, majority of the clinicians in the previous reports¹⁸ favours benzyl penicillin and phenoxymethyl penicillin. Where a combination of antibiotics was indicated, metronidazole was frequently combined with amoxicillin. In spite of this, there was a post-operative acute alveolar osteitis of 2%, which was higher than in some previous works where a figure of 0.6 percent was reported.³ There are theoretical limitations of comparing such reports because it would seem that occurrence of 0.6% in about 1000 mandibular third molar extraction³ is significantly higher than that found in the present audit. There are other documented reasons for the occurrence of dry socket, however, Macgregor found the occurrence of this infection predominately in the age range of 30-34 years.¹⁹ Although our sample is smaller, the incidence

was found in younger age group of 22 - 27 years.

In conclusion, areas of weakness in patient management have been identified. In particular, we have been able to identify poor record keeping of procedures, pre and post-operative findings and insufficient clinical details in all the cases studied. We did not know to what extent these lapses affected the health of the patients nevertheless, corrective measures have since been instituted and close supervision by the senior members of staff are yielding good results. The findings in this audit would therefore produce some base line information on the adherence of trainee residents to some standard protocol.

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