

Managing pericoronitis associated with lower third molars surgically, can we do any better?

J. Liew, A.N. Beech

Department of Oral and Maxillofacial Surgery, Gloucestershire Hospitals NHS Foundation Trust, Gloucestershire, United Kingdom

KEYWORDS

Consenting process, Iatrogenic damage, Pericoronitis, Third molar extraction.

ABSTRACT

Aim: The aim of this study was to identify the number of upper third molars extracted in the Oral and Maxillofacial Surgery department of a district general hospital over a 5-year period in order to alleviate the symptoms of pericoronitis associated with a lower third molar. In addition, we aimed to describe the success rate of this prescription in order to develop a local protocol to be used in appropriate patients.

Materials and methods: Upper third molars were extracted under local anaesthetic within 2 hospital sites between August 2011 and August 2016. These patients had a upper third molar removed due to symptoms of pericoronitis affecting the lower third molar.

Results: Of 47 removed upper third molars, 10 cases were reviewed in 6-8 months post-operatively, 3 cases required extraction of the lower third molars at this point. Another 3 cases were re-referred for recurrent pericoronitis associated with the lower third molars. A success rate of almost 90% was achieved.

Conclusion: The high success rate achieved in the present study demonstrated that the extraction of upper third molars is safe, relatively straightforward and could be performed by general dental practitioners in alleviating the symptoms of pericoronitis affecting lower third molars in appropriate cases.

Introduction

The removal of a mandibular third molar (L3M) is one of the most common surgical procedures carried out in the UK (1). The UK National Institute for Health and Care Excellence (NICE) has published guidelines indicating which patients would benefit from having their wisdom tooth removed, including its optimal timing (2). The removal of L3Ms carries risks for every patient, this includes pain, swelling, bruising, trismus, infection, "dry socket", bleeding and damage to adjacent tooth or restorations. This procedure also could lead to temporary or permanent injury to the inferior alveolar nerve (IAN) or lingual nerve (LN) (3). Temporary disturbance of the IAN from the removal of L3M is quoted to be around 4-5% (range 1.3-7.8%), whereas the risk of permanent/persistent disturbance is reported to be less than 1% (range 0-2.2%) (4).

The removal of L3Ms can sometimes represent a challenging task to the operating surgeon. These procedures are often performed under day case general anaesthesia due to patients' anxiety over the procedure or the degree of difficulty the extraction presents to the surgeon. In view of the risks and complications of a general anaesthesia (Table 1),

removal of third molars is more commonly advised under a local anaesthetic.

The full extraction of the L3M has always been a topic of discussion due to its close proximity to vital structures, leading to the development of the coronectomy procedure in 1989 (6). In more recent years the procedure has increased in popularity and

Table 1 The side effects, risks and complications of general anaesthesia

General anaesthesia	
Side effects	Vomiting Dizziness Shivering Headache Itchiness Bruising/soreness Difficulty in passing urine
Risks and complications	Damage to peripheral nerves Paralysis Allergic reaction to anaesthetic components Mortality (low risk) (5)



Figure 1 A panoramic radiograph illustrating an over-erupted right U3M with repeated trauma to soft tissues of L3M causing recurrent pericoronitis. Note the close proximity of L3M roots to IAN and the close relation of L3M to LR7

is heavily referenced in the available literature (7,8,9). Coronectomy is not without its side-effects and risks, as it is by no means the perfect solution (10,11). However, the option of the removal of maxillary third molar (U3M) to improve symptoms associated with the L3M has been barely mentioned in the literature. Extraction of the U3M is not listed as a management option in the Faculty of Dental Surgery (FDS) guidelines for “Management of Patients with Third Molar Teeth”, originally published in 1997 (2). The same applies to the NICE Guidance published in 2000 on “The Extraction of Wisdom Teeth” (3).

Studies have shown that the removal of U3Ms could significantly improve or even eliminate the symptoms of pericoronitis affecting L3Ms when the soft tissues/operculum of L3M, or fully overlying mucosa and bone is traumatised by an often over-erupted or buccally placed U3M (12,13) (Figure 1).

The removal of the U3M can usually be safely performed by the patient’s general dental practitioner (GDP). This is not only a safer approach by avoiding the known risks associated with L3M removal, but also negates the need for referral to secondary care which could lead to a delay in treatment. Should the symptoms of pericoronitis persist despite the removal of U3M, the patient could then be referred for removal of L3M in secondary care after a period of review.

Aims and objectives

The aim of this study was to identify the number of U3Ms extracted in the Oral and Maxillofacial Surgery department of two district general hospitals over a 5-year period in order to alleviate the symptoms of pericoronitis associated with a L3M. In addition, we aimed to describe the success rate of this prescription in order to develop a local protocol to be used in appropriate patients.

Materials and methods

U3Ms were extracted under local anaesthetic within 2 hospital sites in the period of 5 years. These patients had U3Ms removed due to symptoms of pericoronitis affecting the L3Ms. 3 categories were being looked at within these 48 patients. The categories were the following.

- 1 No evidence of re-referral to our trust after extraction of U3Ms.
- 2 Any planned post-operative review appointments.
- 3 Subsequent re-referral with prescription of extraction of L3M.

All data collected were recorded and stored in Microsoft Excel for data analysis.

The criteria we used in this study to determine the need for removal of U3Ms to alleviate the symptoms of pericoronitis affecting L3Ms are as follows.

- 1 Over-erupted U3Ms.
- 2 Buccally erupted U3Ms.
- 3 U3Ms in occlusion with partly erupted L3Ms.
- 4 U3Ms traumatizing the operculum of partially erupted L3Ms.
- 5 U3Ms traumatizing the fully-overlying mucosa and bone of unerupted L3Ms.

Inclusion and exclusion criteria

We included all U3M extractions under local anaesthetic carried out in our trust’s outpatient department. These procedures were carried out between August 2011 and August 2016. We also included extractions of L3M specifically to alleviate symptoms of pericoronitis affecting L3Ms.

Extractions for any other reasons were excluded in this study. Patients with complex medical histories, i.e. cancer and uncontrolled diabetes as well as patients on bisphosphonate treatment and radiation therapy to head and neck region were also excluded.

Results

Forty-eight patients, with a total of 57 teeth, were included initially; 7 patients’ notes were unaccounted for, summing up to a loss of 10 U3Ms. Eventually, forty-one patients with 47 U3Ms were included, therefore n=47 (teeth).

Of 47 removed teeth, 10 teeth cases were reviewed in 6-8 months post-operatively; 3 Three cases required



Figure 2 The rate of U3Ms extractions in alleviating symptoms of pericoronitis affecting L3Ms

extraction of the L3Ms at this point. Another 3 cases were re-referred by general dental practitioners for recurrent pericoronitis associated with the L3M.

We achieved a success rate of almost 90% with U3M extractions in eliminating the symptoms of pericoronitis affecting L3Ms. The success rate of this result is demonstrated in Figure 2.

Discussion

Although we only have a small group of patients in our study, we have managed to demonstrate high success rates of alleviation of the symptoms of pericoronitis arising from L3M when a U3M was removed in an appropriate situation. It therefore showed that, in appropriate and straightforward cases, the extraction of a U3M could be performed routinely by a patient's GDP. A GDP could then consider a referral to secondary care service if symptoms of pericoronitis associated with the L3M persist.

This procedure not only reduces the patient's wait to receive necessary treatment but would also lessen the number of unnecessary referrals to secondary care (14). When the removal of straightforward U3Ms is carried out regularly by dentists in primary care, it could also reduce the waiting times at the hospital for more complex cases (15). This could indirectly reinforce the cost-effectiveness of the health service, thereby enabling the allocation of resources more appropriately.

This study could also be used as an educational tool to all dental professionals in advocating safe dentistry. This is especially important in gaining informed consent (16) and is significant in the current climate of the much-discussed Montgomery ruling on clinical and medicolegal practice. As a result of the case of *Montgomery v Lanarkshire Health Board*, the law on

informed consent has changed following a Supreme Court judgment in the United Kingdom in 2015 (17).

The Montgomery ruling suggests that doctors or dentists must now ensure that the patients are aware of any "material risks" involved in a proposed treatment, and of reasonable alternatives available (18). Significant changes have been made since previous "Bolam Test", where it defines if a doctor's conduct would be supported by a responsible body of medical opinion (17). In other words, the "Bolam Test" was used to determine what should be disclosed to the patients.

The Montgomery decision redefined the standard for informed consent and disclosure. Now all doctors or dentists should provide patient-centred care, tailoring to each and every patient's needs accordingly. Patients' views should be listened to, and they must be provided with all information necessary to allow them to make an informed decision about their treatment (19).

In view of the Montgomery ruling in the consenting processes, our study demonstrated the need to stay safe by providing alternative options before embarking on invasive procedures, in this case the possible unnecessary removal of a L3M. As previously stated, the extraction of a L3M carries the associated risks of IAN or LN injuries which could be potentially devastating to a patient. Iatrogenic trigeminal nerve injury remains a significant complication carrying with it a disruption of patients' quality of life (20). Even the surgical procedure alone for the removal of a L3M has been shown to impact on a patient's quality of life in the direct post-operative period (21).

From this study, the results demonstrate a positive impact in managing patients suffering with pericoronitis affecting the L3Ms. We have therefore developed a protocol to be adopted by all referring clinicians to our trust. This protocol includes the following.

1 All referrals by general dental practitioners should include orthopantomogram (OPG).

2 If OPG is not attached with referral or has not been requested, then the referral would subsequently be rejected.

3 Removal of U3M by general dental practitioner and a review of 4 months prior to referral if the presence of on-going pericoronitis affecting L3M remains.

4 Signs and symptoms that comply to the NICE Guidance in removal of wisdom teeth.

There are some limitations to our study. The number of patients included was small, despite the 5-year period examined. Therefore, a larger number of patients in a subsequent study would give us more reliable information. The small number of patients could be contributed to several reasons. One could be that many primary care clinicians are performing the routine extraction of the U3M, and not referring in to the hospital.

However, we believe that the more likely reason

is the more traditional view of more experienced clinicians within our trust to prescribe the extraction of a L3M and its opposing U3M when pericoronitis is present. These more experienced clinicians listed the extraction of no U3Ms in the 5 years in our study covered. We have no data to support this however this is our experience due to our trust's "pooled" teeth waiting list.

The creation of our protocol will allow us to carry out an audit of this study to determine the impact of intervention thereby to consequently evaluate outcomes in terms of subsequent L3Ms extracted and total number of referrals for L3Ms. This could be an important measure of quality improvement and continuous delivery of good patient care in our trust for this group of patients.

In the future it would also be worthwhile comparing results from different Oral Surgery and Oral and Maxillofacial Surgery units around the country, so a more robust result can be obtained.

Conclusion

In view of the potential complications and litigations that a clinician might face from the removal of mandibular third molar, keeping abreast with latest guidance and protocol is extremely important to maintain good clinical practice. Patients should be informed of all treatment options available as well as possible risks involved when deciding on their treatment. The decision-making process should be built upon a shared framework of understanding between the clinician and the patient. This is to ensure good clinical outcomes and satisfactory patient experience.

Our study demonstrated that the extraction of U3Ms is safe, relatively straightforward and could be performed by general dental practitioners in alleviating the symptoms of pericoronitis affecting L3Ms in appropriate cases. We achieved a high success rate in our study, thereby avoiding the removal of L3Ms and the associated complications in this group of patients.

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