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Temporomandibular joint disorders in patients referred for third molar extraction

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ABSTRACT

Background: Third molar removal has been implicated as a precipitating event for temporomandibular joint disorders. The aim of this study was to determine what proportion of patients had pre-existing pain and dysfunction that could be attributed to the temporomandibular joints.
Methods: Sixty patients referred for third molar removal were clinically examined and a history of their presenting complaint recorded at the initial consultation visit. Patients were then diagnosed and categorized.
Results: Of the total number of patients examined, 13.3 per cent showed signs and symptoms of temporomandibular joint pain and dysfunction while a further 23.3 per cent also had symptomatic third molar teeth.
Conclusions: The results of this study suggest that the signs of temporomandibular joint disorders are common in patients referred for third molar extractions.

Keywords: Third molar, wisdom teeth, pain, dysfunction, temporomandibular joint, prevalence.

Abbreviations and acronyms: GP = general practitioner; TMD = temporomandibular disorder; TMJ = temporomandibular joint.

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INTRODUCTION

Third molars are blamed by dentists and patients alike for a variety of disorders in the oro-facial region including recurrent infection,[1,2] late dental crowding,[1–3] difficulty eating, facial swelling, headache and pain.[2,4] However, the symptoms of mild to severe temporomandibular joint disorders (TMD) can mimic, both in site and nature, the pain that arises from pathology in the third molar regions. These can include trismus, pain during mastication, otalgia, and tenderness in any of the muscles associated with the masticatory apparatus.[4,5]

While recurrent pericoronitis may be the most common reason for removal (37.5 per cent), a large proportion of third molars are removed in patients who are not experiencing pain attributable to any infection (23.2 per cent).[1]

Opinion is still divided on the benefits of prophylactic removal of asymptomatic impacted third molars[2,6–9] as the surgical procedure itself has well-documented risks and complications. Pain and swelling is frequently encountered[2,6,10] and more rarely, infection, development of an oro-antral fistula,[2,6] displacement of a tooth into nearby tissue spaces[2,6] or even permanent anaesthesia and paraesthesia of the lingual or inferior alveolar nerves.[2,6,10,11]

Because some studies have reported an increased risk of developing a temporomandibular joint disorder as a complication of third molar removal,[10,12] it becomes important medico-legally to identify those patients who have pre-existing pain or any signs of dysfunction in their temporomandibular joints and masticatory structures.

The aim of this study was to examine the population of patients referred for third molar removal at the Royal Hobart Hospital and to determine the proportion whose signs and symptoms indicated the presence of a primary or concomitant temporomandibular joint disorder.

METHODS

Sixty sequential patients referred to the Royal Hobart Hospital Oral and Maxillofacial Unit over a four-month period for extraction of third molars were

Table 1. Cause of presenting complaint

Category	Number	%
Third molars only	38	63.3%
Mixed symptoms	14	23.3%
TMD Only	8	13.3%
Other	0	0.0%

examined clinically and radiographically in a standardized manner by one examiner (AFD) and the results of the examination were recorded.

The developmental status, eruption status and presence or absence of radiographic pathology was also recorded for the symptomatic side along with pain or tenderness in various sites. Where the patient was asymptomatic or both sides were equally painful, the patient's right side was selected for data recording.

Following the clinical examination, a diagnosis of a temporomandibular joint disorder was made in accordance with the second edition of the International Classification of Headache Disorders if the patient had one or more demonstrable signs of joint capsule tenderness, clicking or crepitus in the joint, painful jaw movements or limited opening.[13]

For the purpose of this study, the cause of the presenting complaint was categorized as either being due to pathology of the third molar region, mixed TMD and third molar symptoms, TMD, or as ''other'' for cases that did not fit any of the previous categories (Table 1).

All examination data were completely de-identified and entered into an Excel spreadsheet (Microsoft Corp, Seattle, WA, USA) and statistical analysis was performed using the Chi-squared (χ^2) test.

RESULTS

Sixty patients referred for third molar removal were examined. The primary reason stated in the referral letter was almost evenly divided between pain and impaction. Recurrent infection represented only a minor proportion of the total number of referrals (Table 2). The vast majority of referrals were from dental professionals, with very few (6.7 per cent) from medical general practitioners (Table 3).

It was found that 63.3 per cent of patients referred for third molar extraction had symptoms that could be attributed to impacted third molars with a further 23.3 per cent presenting with additional symptoms of temporomandibular joint dysfunction. For 13.3 per cent of patients, their symptoms were attributed solely to pain arising from the temporomandibular joint and associated muscles (Table 1).

Table 2. Primary reason for referral for specialist third molar tooth extraction

Referral reason	Number	%
Pain/tenderness	23	38.3%
Recurrent infection	13	21.7%
Impacted teeth	21	35.0%
Other	3	5.0%

Table 3. Practitioner type responsible for referral

Referral source	Number	%
Public dental	46	76.7%
Private dental	9	15.0%
Specialist dental	1	1.7%
Medical GP	4	6.7%

Overall, 95 per cent of the patients assessed showed no evidence of any local radiographic pathology in the third molar region while the remaining 5 per cent (three cases) showed radiolucencies in nearby teeth attributable to dental caries.

No association was found between the developmental status of the third molars and either TMD or symptomatically impacted third molars ($p = 0.095$) with the majority of patients having third molars that were fully developed (80 per cent) or undergoing root development (17.7 per cent).

TMD patients were more likely to have unerupted teeth (62.5 per cent), whereas patients with symptomatic third molars were much more likely to have partially erupted teeth (57.9 per cent). However, this was not statistically significant ($p = 0.092$) due to the small numbers of TMD patients in the sample.

Table 4 shows the results of the clinical findings. TMJ lateral pole tenderness on palpation was common (40 per cent), as was tenderness in the masseter and temporalis muscles (25 per cent). The pterygoid region was also tender in 18.3 per cent of patients while evidence of internal derangement in the temporomandibular joint itself was recorded in 16.7 per cent. At the time of examination, 31.7 per cent of patients had tender or inflamed retromolar areas

DISCUSSION

In this study, patients were not controlled for age or gender despite the known preponderance for TMD in females and the only criteria for inclusion into the study was a referral requesting the removal of third molars. This was intentional as there are many studies that well describe the epidemiological aspects of TMD.[14] The aim of this study was only to describe the proportion of patients who presented to the clinic complaining of third molar pain but showed the signs and symptoms of TMD.

The finding that approximately 40 per cent of all patients referred for the extraction of impacted third molars had one or more clinical signs of a potential

Table 4. Frequency of clinical findings in examined patients

Clinical finding	Number	%*
Lateral pole TMJ tenderness	24/60	40.0%
Masseter/temporalis tenderness	15/60	25.0%
Pterygoid/coronoid region tenderness	11/60	18.3%
TMJ clicking/crepitus	10/60	16.7%
Submandibular region pain	8/60	13.3%
Retromolar region tenderness	19/60	31.7%
No clinical findings	24/60	40.0%

*Note that patients may have had more than one relevant clinical finding.

temporomandibular joint disorder is significant (Table 4). Also significant is the fact that for just over one-eighth of all the patients in this study, their symptoms could not be attributed to the presence of impacted third molars (Table 1). This suggests that in a large number of patients, TMD is being overlooked.

Despite not reaching statistical significance in this study, the results suggest that partially erupted third molars are more likely to be symptomatic than unerupted third molars. This is consistent with the difficulty in maintaining adequate hygiene and prevention of food packing around partially erupted third molars that can lead to recurrent episodes of pericoronitis. This is especially marked in those cases where the unerupted third molars closely approximate the distal surface of the second molars and there is an oral communication.

CONCLUSIONS

This study suggests that the signs and symptoms of temporomandibular joint pain and dysfunction are relatively common in patients who have been referred for third molar removal and that for a significant number of these patients, a primary temporomandibular joint disorder is more likely to be the cause of their symptoms rather than the impacted teeth.

This study also highlights the importance of including an assessment of the temporomandibular apparatus in the pre-operative evaluation of patients with impacted third molars.

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