



## Protection of the lingual nerve during operations on the mandibular third molar: a simple method

S. Appiah-Anane, M. G. Appiah-Anane

Garston Dental Clinic, Liverpool; North Mersey Community (NHS) Trust, Abercromby Health Centre, Liverpool, UK

**SUMMARY.** The object of the study was to assess the incidence of lingual nerve sensory loss during removal of impacted mandibular third molar teeth, and the effect of retention of the lingual plate on the incidence.

The subjects were 395 patients, of whom 362 completed the study.

Removal of 504 impacted wisdom teeth with retention of the lingual plate was performed.

Results showed that 381 (76%) of the teeth were partially erupted and the remaining 123 were unerupted. In 497 (99%) bone had to be removed, and of these 376 (76%) required division of the tooth before removal (75% of the entire series). The only complication was transient paraesthesia in one patient which settled within a month.

The study concludes that retention of the lingual plate gives optimum protection to the lingual nerve during removal of impacted wisdom teeth.

### INTRODUCTION

Damage to the lingual nerve is a common complication of removal of mandibular third molar teeth and the reported incidence of permanent sensory loss ranges from 0.5–2%.<sup>1–3</sup> That of transient sensory loss is higher (up to 11.5%). Any technique that will appreciably minimize the risk of lingual sensory loss after mandibular third molar surgery should therefore be welcomed.

Traditionally the lingual nerve is protected during third molar surgery by the use of various retractors. Howarth's (nasal) raspatorry has been the instrument of choice for retraction of the lingual mucoperiosteal flap, but Rood<sup>1</sup> concluded that it is not a satisfactory instrument for protecting the lingual nerve during removal of mandibular third molars. A broad lingual flap retractor has been introduced, but has not been widely tested.<sup>4</sup>

Blackburn and Bramley,<sup>2</sup> however, stated that absolute reliance cannot be placed on a lingual flap retractor to protect the lingual nerve from permanent damage. They postulated that the safety of the lingual nerve is unlikely to be guaranteed in lingual nerve guards or by standard techniques. Robinson<sup>5</sup> concluded that conventional techniques should be used until such time that a proper study of lingual nerve injury after removal of wisdom teeth, with or without lingual flap retraction, had been done.

The stages of the operation at which the lingual nerve is at risk are during the design of the flap, while the mucoperiosteal flap is being raised, while the lingual flap is being retracted, and during removal of bone distal or lingual to the crown of the tooth.

The aim of this study was to assess the incidence of lingual sensory loss after removal of mandibular

third molars by avoiding manoeuvres that may put the lingual nerve at risk.

### PATIENTS AND METHODS

A form was designed on which information about 395 patients who required removal of mandibular third molars was recorded. Impaction was classified according to Howe.<sup>6</sup> All procedures were carried out by the first author under local anaesthesia, with or without intravenous sedation, and in all cases, a buccal mucoperiosteal (envelope) flap was raised and held with a Bowdler Henry rake retractor. No attempt was made to raise and retract a lingual flap, though distal soft tissue was undermined to allow the positioning of a metal sucker directly on to bone. All patients were reviewed 1 week after removal and were questioned about any sensory disturbances.

### RESULTS

A total of 395 patients entered the study of whom 362 completed the follow-up. The 33 patients who did not attend for review were excluded from the study. Details of the patients, their operations, and the classification of their teeth are shown in Tables 1–3.

### DISCUSSION

Sensory loss after removal of mandibular third molars is a disaster, and the medicolegal implications are serious. In two separate High Court rulings, patients

**Table 1** – Age and sex of study group

Sex	Age (years)											Total
	14–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	
Male	12	50	36	25	12	6	4	1	2	0	1	149
Female	20	90	55	25	10	5	3	1	1	2	1	213
Total	32	140	91	50	22	11	7	2	3	2	2	362

**Table 2** – Classification of wisdom teeth according to state of eruption and impaction

	Partially erupted	Unerrupted	Total
Vertical	20	7	27
Distoangular	173	16	189
Mesioangular	187	96	283
Horizontal	1	4	5
Total	381	123	504

**Table 3** – Third molar surgery classified according to bone removal and sectioning of teeth

	Bone removal	Teeth sectioned	No bone removal
Vertical	24	10	3
Distoangular	186	148	3
Mesioangular	282	213	1
Horizontal	5	5	—
Total	494	376	7

who had sustained lingual damage after the extraction of wisdom teeth were compensated with awards of £12 000 and £14 000 because the operations had been 'negligently performed'.<sup>7</sup> After a recent case in Ireland damages of £40 000 were awarded.<sup>8</sup>

Traditionally, the main purpose of placing a lingual retractor during such operations is to protect the lingual nerve, and it may be difficult to defend any legal action should lingual dysaesthesia develop unless this is done and recorded in the patient's case notes. Sir Ogden said the sentiment amounted to 'a very sad piece of defensive medicine'.<sup>7</sup> However, it has been postulated that the mere act of placing the retractor or retracting the lingual mucoperiosteal flap can injure the lingual nerve.<sup>2</sup> Placing a Howarth's raspatorily lingually can be a difficult technical exercise for the inexperienced surgeon and in situations where the anatomy has been distorted by pathology (recurrent pericoronitis resulting in pericoronal scarring).

It is interesting that 3.4% of patients in Mason's study,<sup>3</sup> who did not require bone removal had transient sensory loss after their operations. Lingual nerve damage is most likely to occur after the removal of wisdom teeth that are impacted either vertically or distoangularly.<sup>2</sup> This is because the surgeon is tempted to remove bone distal to the crown of the impacted teeth while vision is obscured by the crown of the tooth; the lingual retractor is relied on to protect the nerve. Rees<sup>9</sup> (in his letter following an article by Rood) postulated that to protect the lingual nerve during removal of wisdom tooth, perhaps the lingual mucoperiosteal flap should not be stripped or retracted at all. The results of this study confirm this. There are some who may worry about this technique,

because it contradicts the conventional teaching that nerves should be 'protected'. By not disturbing the lingual 'cuff' (the mucoperiosteal flap and lingual bone), however, the lingual nerve has the optimum protection.

Some also believe that excessive buccal bone will have to be removed with this technique, when the lingual cuff is left undisturbed. This is not so in practice. Perforation of the lingual plate of bone is avoided by sectioning the wisdom tooth incompletely with a bur and then completing the division by placing Coupland's gouge into the cut and turning it. Should it be difficult to raise a fragment it may be divided further. This approach makes the procedure easier and atraumatic.

There is a risk of damage to the lingual nerve during the design of the buccal mucoperiosteal flap, as the lingual nerve can be either at or above the level of the alveolar crest.<sup>10</sup> The surgeon cannot therefore rely totally on the lingual plate to protect the nerve during third molar surgery. An incision directed upwards and outwards along the external oblique ridge should bypass all anatomical variants of the nerve.<sup>10</sup>

## CONCLUSION

Retention of the lingual cuff of tissue affords optimum protection for the lingual nerve during removal of mandibular third molars. In this study only one of the 362 patients (who had 504 wisdom teeth removed in total) had transient lingual sensory loss. There was no permanent damage to a lingual nerve.

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### **The Authors**

**S. Appiah-Anane FDSRCS(Eng), FFDRCSI**  
Practice Limited to Oral Surgery

Garston Dental Clinic  
Moss Street  
Garston  
Liverpool L19 2NA, UK  
**M.G. Appiah-Anane DDPHRCS (Eng), MSc**  
North Mersey Community (NHS) Trust  
Abercromby Health Centre  
Liverpool L8, UK

Correspondence and requests for reprints to Mr S. Appiah-Anane

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