

## Wrong tooth extraction: Root cause analysis

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**Objective:** Errors made by clinicians in dental practice require changes in the original planning of patient management. The purpose of this study was to analyze events that led to wrong tooth extraction. **Method and Materials:** A total of 54 insurance claims for wrong tooth extractions were reported and evaluated by Medical Consultants International from 1993 to 2004. Data were collected and analyzed according to parameters regarding the clinician who performed the procedure, the nature of the referral for extraction, the demographics of the patient, the venue in which the extraction took place, the reason for the error, and the nature of the insurance claim. **Results:** General practitioners performed 72% of the extractions, 49% of the referring clinicians were orthodontists, 74% of the errors were made during extraction, and 77% of the errors were made in polyclinics. **Conclusions:** Errors during treatment and poor communication among clinicians led to extraction of the wrong teeth. This can be avoided by greater caution on the part of the extracting clinician when following the treatment plan. Guidelines toward this end are recommended. (*Quintessence Int* 2010;41:869–872)

**Key words:** tooth extraction, treatment error, wrong tooth extraction

Tooth extraction is a common procedure in dental practice, making it all the more curious how rarely wrong tooth extraction is mentioned in the literature and the fact that its incidence is unknown. Given that medical errors in general tend to be underreported,<sup>1</sup> it seems reasonable to assume that the known figures on wrong tooth extraction are lower than actually is the case, as well. Numerous extractions are performed based on a referral from another clinician, without the operator's being acquainted with the patient and the referring clinician's overall treatment plan. This gap could result in the need for taking corrective measures should an error occur, an event that could be expensive and certainly aggravating to both the patient and the clinician.

In 2005, the ADA Council on Members Insurance and Retirement Programs conducted a survey on the frequency, severity, and causes of dental malpractice claims reported between 1999 and 2003. Fifteen of the leading dental professional liability insurers across the country participated, which together insured nearly 104,600 licensed dentists. In the report of the results, the ADA published that statistics on dental malpractice claims are available only from the insurance companies that underwrite dental professional liability insurance.<sup>2</sup> But these companies do not publicly disclose the data they collect, most likely for competitive reasons. In the survey, the definition of "incidence" of professional liability claims was the total number of reported claims divided by the total number of the company's dentist policyholders, and a "claim" was defined as an occurrence in which a patient demanded damages from the insured company. The survey revealed that 4.8% of the allegations involved in paid claims were due to treatment of the wrong tooth.<sup>2</sup>

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In Israel, 70% of dental practitioners are obliged to report any incidence of legal action against them to the Medical Consultants International Co (MCI) as part of their professional liability insurance (the other 30% are insured by other companies). Trends in the incidence and severity of dental malpractice claims are important in evaluating opportunities to improve the quality of patient care. The purpose of this study was to retrospectively measure the extent and analyze the events leading up to the wrong tooth extraction of all cases reported to the MCI from 1993 to 2004 to improve patient care.

## METHOD AND MATERIALS

Of the working dental practitioners in Israel, 5,000 of 7,000 (about 70%) are insured by the MCI. Ten percent of the working dental practitioners are registered specialists. The MCI manages 800 to 900 dental insurance claims per year, of which 80% to 85% of the claims involve payment, mostly via settlement outside court.

Data on all claims that involved complaints of wrong tooth extraction were collected into a specially designed form and analyzed according to the following:

- Date the event occurred
- Specialty of the clinician who performed the extraction
- Specialty of the referring clinician
- Sex and age of the patient
- Details of the event itself: the tooth that was supposed to have been extracted, the tooth that was erroneously extracted, the contents of the letter of referral, the complaint (*primary* when reported to the MCI by the clinician, *secondary* when reported by the patient, *tertiary* when reported as a lawsuit)
- Stage when the error occurred (during preoperative planning or intraoperatively)
- Type of clinic where the extraction occurred (ie, polyclinic or a one-clinician office)
- Details of the claim: liability of the clinician, time between event and claim,

behavior of the responsible clinician (eg, forthcoming or not), and the required corrective treatment and its cost

## RESULTS

A total of 54 claims of erroneous tooth extraction were filed during the study period. The specialty of the clinician who performed the extraction could be traced in 52 cases: 37 (71%) were general practitioners, and 15 (29%) were specialists, of whom 14 (26%) were oral and maxillofacial surgeons and one (2%) was a pedodontic specialist.

The referring physicians could be classified in 43 (80%) cases. They included 24 (56%) specialists, of whom 21 (49%) were orthodontists and 19 (44%) were general practitioners.

The patients' sex and age were known in 34 (63%) cases: There were 19 (56%) women and 15 (44%) men (ratio 1:1.3), whose ages ranged from 8 to 69 years (mean 24, median 16).

The cause of the error could be traced in 48 (89%) cases: The extracted tooth was adjacent to the intended tooth in 32 cases (67%), there was confusion among quadrants in 7 cases (15%), and there was confusion between the planned primary tooth to be extracted and the adjacent permanent tooth in six cases (13%). The remaining three (6%) cases could be traced but not categorized. Forty errors (77%) occurred in polyclinics, whereas 12 (23%) errors occurred in a single clinician's office.

The extracting clinician made most of the errors and did so intraoperatively (38 of 51 cases, 74%). Preoperative errors consisted of mistakes in treatment planning (seven cases, 14%) and at the referral stage (six cases, 12%).

Forty-two (87.5%) referral letters and six personal communications between clinicians (12.5%) were available for scrutiny. The tooth marked for extraction in the referral letter was incorrect in seven (14%) cases.

Thirty-three clinicians admitted to erroneous tooth extraction, and 14 did not. Six of

them were registered specialists. MCI consultants found the clinician liable in 48 cases (89%). No liability was found for the remaining six cases (11%).

The results of each of the three groups of insurance claims were as follows: 18 cases (35%) were primary complaints, 25 cases (49%) were secondary complaints, and five cases (10%) were tertiary complaints.

The mean time from mistaken tooth extraction to filing a complaint was 7.3 months (range 0 to 84). Eight patients were not informed of the error. The patient and insurance company settled out of court in 36 cases. One case ended with a court verdict of liability. The remaining cases are still in process. The compensation fee ranged from one-half to 10 times the cost of a full orthodontic treatment. Patients were treated with dental implants (22 patients), orthodontic compensating therapy (9 patients), and fixed or removable dentures (11 patients). Of the 42 patients whose relevant data were available, 21 (50%) did not continue treatment in the clinic in which the error was made.

## DISCUSSION

According to the present findings, most errors in tooth extraction occurred in polyclinics where more than one clinician is involved in the treatment and not all are well-acquainted with the patient or treatment plan. Most errors were performed during the extraction itself, and the mistaken extractions were of an adjacent tooth, a permanent tooth instead of a primary one, and a tooth on the wrong side or jaw. All errors occurred due to confusion and miscommunication between clinicians within and between clinics.

The present study revealed that 28% of all the wrong tooth extractions were by specialists, representing almost threefold their rate in the entire clinician population. This can most probably be explained by the fact that most of the teeth were extracted in a polyclinic staffed by specialists or residents of oral and maxillofacial surgery.

Most of the teeth were extracted in young patients for orthodontic reasons rather than

dental caries or periodontal disease. As such, the teeth were mostly intact and thus carried a relatively high risk of identification errors. Other than the financial implications, the damage in extracting a wrong healthy tooth in terms of esthetics and function is inevitably higher.

After it becomes apparent that an error has been made, it is the clinician's responsibility to acknowledge it, explain the nature of the error to the patient, and discuss the available options to repair the damage. Patients might be more understanding if they receive all of the information promptly.<sup>3</sup> Most of the clinicians (33/47) took responsibility for their action, while 14 did not acknowledge their mistake. Six of the 14 (43%) who did not acknowledge their error were registered specialists.

In 1998, Chang et al<sup>4</sup> showed that an educational program can reduce the incidence of wrong-site tooth extraction. Of about 24,000 extractions in the outpatient clinic at the National Taiwan University Medical Center, eight cases of wrong site tooth extraction were reported. Those authors proposed a set of clinical guidelines that reduced the incidence of wrong-site tooth extraction to 0 of 28,000 extractions from 1999 to 2001. They are as follows:

- Include a brief description of the condition of the tooth to be extracted and of the adjacent teeth if necessary in the written order for tooth extraction.
- Inform the patient (parent or guardian for a child) about the position of the tooth to be extracted and the reason for extraction.
- Verify the tooth intended for extraction with the patient (parent or guardian), carefully identifying the tooth position in question to the patient (parent or guardian).
- Encourage patients to communicate verbally with the referring clinician whenever it is considered necessary.
- Check tooth position before and after applying forceps.

Errors of tooth extraction can happen to every practitioner. It is crucial to avoid this type of error by a higher level of awareness as part of the everyday routine of making an accurate diagnosis, choosing the right treatment plan,

and writing a referral that clearly explains the reason for extraction and the precise identification of the tooth. When referring the patient to another clinician, it might be helpful to add a few more precautions:

- Ensure that the treatment plan is clear and understandable to all treating clinicians.
- Ensure that there is a leading clinician who will supervise and coordinate the treatment modalities and be responsible for updating the treatment plan and informing the patient and treating clinicians about any changes.
- Ensure that the extracting clinician is acquainted with the full treatment plan and that clarification is sought whenever necessary.
- Ensure that the treating clinician explains the procedure and obtains informed consent for each treatment.

Finally, it is important to remember that there might be several options in the planning of treatment that may seem unusual to the extracting clinician. Verification should be made to ensure that the tooth designated for extraction is the one intended in the treatment plan. If in doubt, the referred clinician should always seek clarification. If an error occurs, the best way to handle it is to promptly disclose it to the patient and explain the consequences and treatment options.

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