Misadventure and accidents in endodontics: An Australian perspective

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Abstract

Objectives: To provide an overview of the recent history of complaints and litigation relating to endodontics in Australia. **Methods and Materials:** Data on complaints was extracted from annual reports of the national regulator (the Australian Health Practitioner Regulation Agency, AHPRA). For co-regulated Australian jurisdictions, data on complaints were derived from the annual reports of the Office of the Health Ombudsman (Qld) and the NSW Dental Council. The major patterns were compared to trends in the international literature. Results: Instrument separation, perforations, and extrusion of irrigation fluid may occur during endodontic treatment, as well as other triggers for adverse outcomes. Clinical significance: Assessment of the difficulty of the case prior to commencing endodontic treatment is essential, as is thorough planning of the treatment which follows successful obturation of the treated tooth. Using a proforma to assess case difficulty is recommended.

Key words: Endodontics, negligence, complaints, malpractice
Short title: Accidents in endodontics

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Introduction

Medical negligence is a significant concern for health professionals across the globe, with a trend of rising incidence of complaints to regulators. In the Australian state of Queensland, where there are currently 3,456 dentists (including 321 specialists), during the 12 months to July 2017, there were 374 complaints lodged with the Office of the Health Ombudsman regarding Queensland dentists, of which 238 (64%) were based on concerns regarding professional (technical) performance.[1] Over the same period, a total of 179 cases were sent to the national registration body (The Australian Health Practitioner Regulation Agency, AHPRA) for further action by the Office of the Health Ombudsman. In New South Wales, where there are some 5,402 dentists (including 483 specialists), during the 12 months to July 2017, there were 403 complaints lodged to the NSW Dental Council, of which 308 (76%) related to professional performance.[2]

Complaints and their triggers

Complaints regarding endodontic treatment occur across all jurisdictions in Australia, and a summary of these is shown in Table 1. Typical triggers for complaints are shown in Table 2, and examples of accidents, malpractice and negligence in Table 3. Negligence is a mistake, while malpractice is a wilful breach of duty of care. One must remember that the number of complaints reported recorded by regulators such as AHPRA (or recorded in the literature) does not capture the volume of incidents that are resolved within the practice environment, where the patient does not go on to lodge a formal complaint.

Table 1. An overview of 69 complaints relating to endodontics based on reports from the Australian Health Practitioner Regulation Agency from 2011-2015.

Complication	Cases
Treatment Planning	18
Informed Consent	10
Infection Control	3
Record Keeping & Professionalism	28
Maintaining Current Standards of Care	15
Anaesthesia	3
Radiology	2
Pharmacology	2
Endodontic Specific Procedures	6
Post-Operative Failure	2

Litigation for endodontic adverse outcomes

In addition to complaints made to regulators, aggrieved patients may also pursue legal action for damages. Triggers for litigation may be malpractice, negligence or accidents. A range of events during endodontic treatment could be possible triggers for a complaint (Table 1). Litigation involves compiling the details of the complaint and its impact on the patient, drawing on the clinical notes, reports from relevant expert peers (general dentists or specialists) to assess whether the treatment offered was appropriate, reasonable and necessary. The litigation process also involves determining the extent of loss or damage suffered as a result of the treatment. While most jurisdictions in Australia cap the amounts awarded for damages (e.g. under the Civil Liability Act 2002 (NSW)), such limits may be overlooked when there is evidence of "an intentional act that is done by the person with attempt to cause injury" (Section 3B Civil Liability Act). For example, in a 2012 dental negligence case in NSW involving restorative dentistry, an extraordinary judgment was made of over AUD $330,000 plus costs.[3]

According to the American Academy of Endodontists, in the United States more than 15 million root canal treatments are performed every year (i.e. more than 41,000 per day), with specialist endodontists performing on average 25 root canal treatments each week, as opposed to general dentists who average fewer than 2 per week. The reported satisfaction rate with specialist endodontic treatment is 89%, meaning that 11% had borderline or negative experiences.[4]

Events that may lead to complaints

From an analysis of 1271 endodontic malpractice claims in Finland, the most common events arising from endodontic treatments undertaken in general practice were broken instruments (24% of submitted claims), followed by perforations (22%) and reactions to irrigant solutions or medicaments (5%).[5,6]

Negative known impacts of failed or incomplete endodontic treatment can also include serious infections, leading to systemic complications including life-threatening infections (brain abscesses, and osteomyelitis), irreversible brain damage and death. Four fatalities from endodontic procedures undertaken in the US have been described.[7]

Other events that have been reported in the global literature on endodontic treatment include poor record

Table 2. Endodontic events that may trigger a complaint

Failure to recognise a canal (e.g. MB2 in upper first molars)
Perforations
Separation of instruments
Ledges or transportation of canals
Not adequately treating cases with complex anatomy (e.g. dens invaginatus, or teeth eith unusual root canal morphology)
Not taking sufficient radiographs to properly diagnose and treat the case, or taking excessive radiographs due to poor alignment or other radiographic errors
Extrusion of irrigation solutions
Extrusion of root filling materials or sealers from the confines of the root canal system
Air embolism from the use of compressed air in the root canal space
Sinus perforations
Nerve damage
Infection requiring hospitalization

keeping and case documentation, lack of informed consent, incorrect diagnosis and treatment planning, and the use of outdated techniques and materials.

Prevention of adverse events

Thorough treatment planning, proper processes for gaining informed consent, stringent infection control, and correct record keeping and professional behaviour apply to all areas of clinical practice. In 2012, the NSW Court of Appeal (case 223) prosecuted a dentist for endodontic treatment of a patient without appropriate documentation of consent. Seeking additional opinions on a case becomes important when there is a clinically complex situation such as true endo-perio lesion that requires carefully planned multidisciplinary treatment. The American Association of Endodontics classification of difficulty of cases provides a widely used method for assessing the difficulty of endodontic cases prior to commencing treatment.[8]

Teeth where endodontic treatment is planned need to be evaluated for issues including canal curvature and patency, and the presence of calcified canals on the pre-operative radiograph. When an instrument separation occurs and the instrument cannot be retrieved immediately, the patient should be advised of the event, and referred to an endodontist for management. It is essential that the treatment notes made at the time document the situation and the advice given.

To reduce the likelihood of perforations and file separations, employ a radiographic tube-shift technique to reveal accessory and additional canals or canal bifurcations. A common triad of errors involves failure to diagnose, failure to treat and failure to refer. For example, if the dentist does not identify problems with root canal patency, then the situation of a file binding and separating may occur. Not disclosing this to the patient or arranging for the broken file to be retrieved may then constitutes deception and a failure to refer.

Table 3: Examples of malpractice, negligence and accidents in endodontics

Malpractice	Negligence	Accidents
Not using dental dam	Fracture of tooth due to improper selection of clamp. Failure to ensure leak proof dental dam	Fracture of a clamp Tear in rubber dam due to the dam being weakened by chemical solvents or sharp instruments
Using blunt, rusty or corroded files.	Improper use of rotary files (e.g. unwrapping files that have bound onto the root canal walls)	Extrusion of droplets of fluid into the periapical tissues when using normal irrigation methods
Failure to inform the patient of possible complications or consequences of treatment.	Failure to recognise and manage perforations	Late discovery of vertical/horizontal root fractures midway through treatment that renders the tooth un-restorable.
Performing root treatment of a tooth with a hopeless periodontal prognosis of that is not restorable		
Cementing a crown or post-core after root canal therapy with grossly deficient margins.	Failure to check/or adjust occlusion of temporary or final restorations of the access form	Rubber dam clamp being dislodged by tongue movement.

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