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REVIEW ARTICLE

Accidental ingestion of foreign object: Systematic review, recommendations and report of a case

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Abstract One of the serious complications during a routine endodontic procedure is accidental ingestion/aspiration of the endodontic instruments, which can happen when proper isolation is not done. *There are at present no clear guidelines whether foreign body ingestion in the gastrointestinal tract should be managed conservatively, endoscopically or surgically.* A 5 year old boy reported to the Department of Pediatric and Preventive Dentistry, D.A. Pandu Memorial R.V. Dental College, Bangalore, India, with a complaint of pain and swelling in the lower right back teeth region. Endodontic therapy was planned for the affected tooth. *During the course of treatment the child accidentally swallowed a 21 mm 15 size K file.* Endoscopy was performed *immediately* but the instrument could not be retrieved. The instrument passed out *uneventfully* along with the stools 48 h after ingestion.

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Dental materials;
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Caries;
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Dental restoration;
Emergencies;
Endodontic files;
Endodontics;
Dental instruments;
Foreign bodies

Careful evaluation of the patient immediately after the accident helps in managing the patient effectively along with following the recommended guidelines.

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1. Introduction

Accidental foreign body ingestion is a common clinical problem especially in children. Although complications are higher with sharp implements, reported rates of gastrointestinal perforation still remain rare at less than 1%. Dentures and small orthodontic appliances (73%) account for the majority of accidental sharp objects ingestion in normal adults. Other commonly ingested sharp objects also include sewing needles, tooth picks, chicken and fish bones, straightened paper clips and razor blades. Most foreign bodies pass through the gastrointestinal tract uneventfully. The majority of the reported literature describe the management of ingested blunt objects. *However, ingestion of sharp objects can still occur with a higher rate of perforation corresponding to treatment dilemmas* (Dhandapani et al., 2009).

There are at present no clear guidelines whether foreign body ingestion in the gastrointestinal tract should be managed conservatively, endoscopically or surgically (Kürkciyan et al., 1996).

An important point to note here is that endoscopic or surgical intervention is indicated if significant symptoms develop or if the object fails to progress through the gastrointestinal tract (Uyemura, 2006a).

1.1. Systematic review of literature

1.1.1. Incidence

Foreign body ingestion is a commonly seen accident in emergencies, usually in children (80%), elderly, mentally impaired, or alcoholic individuals, whereas it may occur intentionally in prisoners or psychiatric patients (Pavlidis et al., 2008).

Fixed prosthodontic therapy had the highest number of incidents of adverse outcomes. Ingestion was a more prevalent outcome than aspiration. Dental procedures involving single-tooth cast or prefabricated restorations involving cementation have a higher likelihood of aspiration (Kürkciyan et al., 1996).

For the endodontic instruments: the incidence of aspiration was 0.001 per 100,000 root canal treatments and the incidence of ingestion was 0.12 per 100,000 root canal treatments. The aspirated endodontic instruments and dental items required statistically more frequent hospitalization than the ingested items ($P < 0.0001$). The endodontic instruments did not require more frequent hospitalization than other dental items when aspirated (ns) and when ingested (ns). No fatal outcome was reported (Susini et al., 2007).

Neuhauser suggested that patients in a supine position are more or less prevented from swallowing foreign objects (Neuhauser, 1997).

Barkmeier et al. stated that supine position increases the risk of swallowing (Barkmeier et al., 1978).

The percentage of endodontic instruments aspirated or ingested were 2.2% and 18%, respectively. For the endodontic instruments, the prevalence for aspiration was 0.0009 per 100,000 root canal treatments and the prevalence for ingestion was 0.08 per 100,000 root canal treatments. All aspiration cases (100%) required hospitalization compared to 36% for ingestion (Susini and Camps, 2007) (Table 1).

1.1.2. Complications

Complications usually occur with sharp, thin, stiff, pointed and long objects.

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