



Barriers to gold standard emergency endodontic treatment at Emergency Dental Centre in Glasgow, UK, during Covid-19 pandemic

Joanna Kociubinska

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ABSTRACT

Background

In Greater Glasgow and Clyde, unregistered patients, and patients travelling away from home, have access to the Emergency Dental Treatment Centre (EDTC) for any dental emergencies. The treatment is limited to managing the dental emergency until the patient can seek more definitive care. The number of slots available is limited and with Aerosol Generating Procedures requiring separate and longer appointments during Covid-19 pandemic, seeing the same patients again put increased stress on the already busy service.

Objectives

The aim of the project is to look at how to decrease the number of patients re-attending emergency dental service, within the first 1 to 6 months following first AGP appointment, during Covid-19 pandemic.

Material and methods

A retrospective data collection was carried out during the period from 1st November 2020 to 31st October 2021.

Results

In total, 494 patients required Aerosol Generating Procedure in the analyzed period. 474 patients required an AGP due to endodontic emergencies.

The other 20 patients attended due to periodontal problems, including pericoronitis. 89 patients required a second appointment within the first 1-6 months, 19 patients required 3rd, and 5 required 4th appointment respectively. 24 teeth were extracted at the 2nd, 3rd, or 4th appointment.

Conclusions

Covid-19 pandemic with enhanced cross infection requirements and reduced access to dental care has highlighted issues with emergency endodontic treatment at Emergency Dental Treatment Centre, in Glasgow, UK. Barriers to gold standard emergency endodontic treatment could be overcome by following recent evidence-based literature and guidelines for endodontic emergency management. This involves routine use of rubber dam, use of burs or files to flare coronal portion of the root canals, use of NaOCl to chemically debride

root canal system, calibrating radiographic software to allow calculate estimated working length, handing out NHS practice list by reception staff to all emergency patients, particularly the ones who require follow-up treatment.

I. BACKGROUND

COVID-19 has caused an undeniable impact on services across the healthcare spectrum, not least in dentistry. In March 2020, dental practices across the UK were instructed to close, requiring the set-up of Urgent Dental Care Centres (UDCC) to try and treat dental emergencies that could not be managed by phone triage and medication.

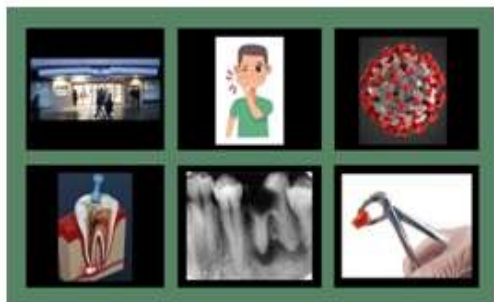
18 months since practices were allowed to re-open and start treating their patients again, the difficulty of accessing dental care for unregistered patients remained an ongoing issue as practices struggled to overcome treatment backlogs, coupled with the addition of more restrictive requirements regarding aerosol-generating procedures (AGPs).

In Greater Glasgow and Clyde, unregistered patients, and patients who may be travelling away from home, have access to the Emergency Dental Treatment Centre (EDTC) for any dental emergencies. The treatment is limited to managing the dental emergency until the patient can seek more definitive care.

In January 2021, Public Health Scotland released a report indicating that 96% of the Scottish population in September 2020 were registered with an NHS dentist, with almost 100% of adult patients, and around 93% of children, living in Greater Glasgow & Clyde being registered.

However, many people who have just moved to Glasgow in the last two years prior to pandemic were finding it difficult to get an NHS practice to take them on, meaning they could end up needing to access the unregistered service multiple times.

The number of slots available at the EDTC have always been limited, and with AGPs requiring separate and longer appointment times, seeing the same patients again put increased stress on an already busy service.



II. OBJECTIVES

Patients can end up re-attending the EDTC for several reasons, some of which include ineffective initial treatment, misdiagnosis of the presenting issue, lack of motivation in seeking routine dental care in the community and/or inadequate oral hygiene measures. The aim of this project was to look at how the effectiveness of AGPs could have been increased during Covid-19 pandemic, and in turn decrease the number of patients re-attending the unregistered emergency dental service.

III. MATERIAL AND METHODS

A retrospective data collection was carried out at the two main centres for emergency dental care (Level 1 Glasgow Dental Hospital and Bridgeton Health Clinic) during the period from 1st November 2020 to 31st October 2021. It looked at all patients who attended for an AGP appointment and whether these patients required subsequent appointments within our service. An analysis of the data was then carried out using information obtained from the data sheet.

Simple and clear guidance was sought for diagnosing and managing dental emergencies so that it could be signposted on the clinic for all dental professionals to review regularly.

As endodontic treatment is by far the most common emergency AGP, further guidance was sought to understand what the 'gold standard' for treating these cases would be, and how we could achieve that at the EDTC, if we were not doing so already.

IV. RESULTS

In total, 494 patients had an AGP procedure between 01/11/2020 and 31/10/2021.

474 patients required an AGP due to endodontic emergencies: pulp and root canal conditions and peri radicular conditions. The other 20 were mostly due to periodontal problems, including pericoronitis.

89 patients required a second appointment within the first 1-6 months, 19 patients required 3rd and 5 required 4th appointment respectively (Table 1).

Additional 36 AGP appointments and 77 non-AGP appointments were required on top of the original 494 initial AGP appointments, which means 23% additional appointments required within the first 1-6 months, for the patients who initially presented with dental emergency (Table 1, Figure 1).

Interestingly 24 teeth were extracted at the 2nd, 3rd, or 4th appointment (Figure 2), which equals to 4.9% of all teeth requiring AGP at the first appointment, and 5% of teeth that required AGP due to the endodontic emergencies.

V. DISCUSSION

Diagnosis and Management of Dental Emergencies

Diagnosis is a very important step in managing dental problems as it will focus the treatment delivered to the patient. A clear diagnosis is important for the patient also, so they have a better understanding of what is going on. All clinicians should be able to explain clearly to a patient what the diagnosis is when they are assessed, and why treatment is required if necessary.

SDCEP have published an excellent document on the management of acute dental issues. It details almost the entire range of oral diseases and conditions that patients could present with in the emergency clinic, as well as outlining the ways in which they are best managed.

All staff working at the EDTC will likely have some knowledge of SDCEP and the guidelines they publish and review on a regular basis. The guidance for acute dental problems is easily accessible online and include a Web App which can be used by all clinicians and dental support staff, especially during the triage phase which has become common practice for all patients attending the clinic. The Web App is interactive and can be used on a computer, tablet, or smartphone device.

For endodontic diagnosis, there is an excellent paper published by the American Association of Endodontist illustrating issues patients may present with.

Emergency Endodontic Treatment

Endodontic emergencies are reported to account for 60-82% of all presenting dental emergencies. Emergency pulpotomy/pulpectomy and dressing is the most common treatment requiring an AGP at the emergency clinic. This is the first stage in root canal treatment, required in



teeth showing signs of irreversible pulpitis, apical periodontitis, or apical abscess which the patient wishes to try and save. Obturation of the root canals is not completed at the EDTC, so it is up to patients to seek a GDP in the community who can finish the endodontic treatment and restore the tooth. The treatment we carry out will hopefully eliminate any symptoms the patient is having until they can arrange care with a GDP.

Teeth that have been extirpated will eventually become symptomatic again if root canal treatment has not been completed. This is usually the main reason for re-attendance following an AGP. The amount of time the tooth remains asymptomatic following pulp extirpation can be influenced by several factors, most notably the quality of the initial treatment carried out. Studies suggest that definitive endodontic treatment must be initiated within six months of emergency treatment to avoid another painful episode.

Recent publication in the International Endodontic Journal provides a very detailed overview of endodontic emergencies⁸.

Guidance has been reviewed from the American Association of Endodontists⁶ the British Endodontic Society⁹, the European Society of Endodontology¹⁰ to discern what the 'gold standard' of treatment is in an endodontic emergency and how we can apply this on the clinic. Full chemo-mechanical debridement to working length is a common feature between all the guidance as being key to successful treatment.

Irrigation with sodium hypochlorite (3-5%) is also a key factor, along with getting a good seal with a suitably strong intermediate restoration. Irrigation with sodium hypochlorite in turn necessitates the placement of rubber dam.

Ledermix or non-setting Calcium Hydroxide are the intracanal medicaments of choice, with non-setting Calcium Hydroxide becoming more popular among endodontists in cases with necrotic pulps.

File choice, whether manual or rotary, is not a major consideration when it comes to emergency treatment. However, flaring of the coronal portion of the canals with a suitable bur or file should be considered to facilitate more effective chemical debridement.

Appropriate antibiotic therapy should also be considered in specific cases¹¹, along with relevant analgesic advice for potential postoperative pain.

VI. CONCLUSIONS

Covid-19 pandemic with enhanced cross infection requirements and reduced access to dental

care has highlighted issues with emergency endodontic treatment at Emergency Dental Treatment Centre, in Glasgow, UK.

Overall, the re-attendance at EDTC has been high in the analysed period (23% additional appointments required within the first 1 to 6 months, Figure 1, for the patients who initially presented with dental emergency). This could've been impacted by Covid-19 pandemic and inability for the patients to register and obtain follow-up treatment, low patient's motivation on dental health or by operational inaccuracies e.g.: insufficient chemical debridement of the root canal, decontamination of the root canal system with saliva or pushing the infected necrotic tissues through the apex.

Barriers to 'Gold Standard' Emergency Endodontic Treatment at the EDTC

The emergency dental clinic has full access to digital radiography in each of the surgeries, however the x-ray software is not automatically calibrated to measure lengths, relying only on manual calibration which is prone to error. This means estimating the working length can be difficult before beginning any endodontic procedure.

The use of apex locators may be considered excessive in an emergency, so not being able to measure a working length from a pre-op radiograph is prohibitive and may affect the quality of any treatment carried out.

The use of rubberdam and sodium hypochlorite is not widespread, although they are both considered imperative for quality endodontic treatment. This may be due to perceived difficulty in placement of the rubber dam. If the tooth being treated is not isolated, this would obviously preclude the use of sodium hypochlorite, meaning lesser effective irrigants such as chlorhexidine or saline are used instead.

The following recommendations could help to minimise recurrent pain episodes following endodontic emergency and reduce re-attendance with the same tooth:

1. Routine use of rubber dam for every endodontic emergency requiring AGP
2. Routine use of burs or files to flare coronal portion of the root canals
3. Routine use of NaOCl to chemically debride root canal system
4. Calibrating radiographic software to allow calculate estimated working length



- 5. Handing out NHS practice list by reception staff to all emergency patients, particularly the ones who require follow-up treatment

Follow-up study

Once the changes have been implemented, another cycle of data collection and analysis could help assessing how these changes affected re-attendance with recurring pain, following endodontic emergency, at Emergency Dental Treatment Centre in Glasgow.

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Table 1. Follow-up from emergency dental appointment

	Total number of patients	AGPs	Non-AGPs
Endo emergencies at 1 st appointment	474	474	0
Other Emergencies at 1 st appointment	20	20	0
2 nd appointment required	89	23	66
3rd appointment required	19	11	8
4th appointment required	5	2	3



FIGURE 1. Additional appointments required following AGP procedure

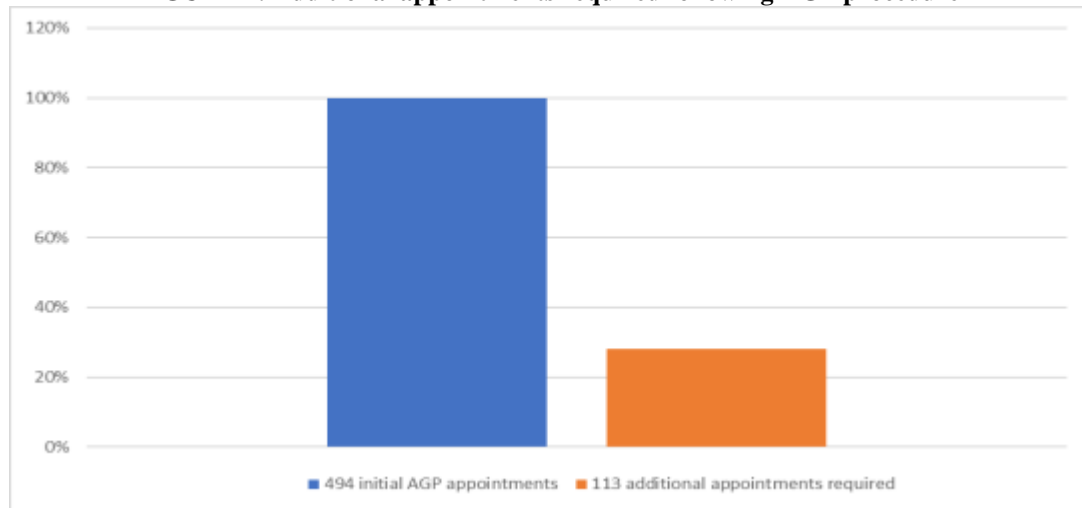


FIGURE 2. Extractions following endodontic emergency

