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Case Report

Managing Apicoectomy procedure in a severely self-neglected natural dentition

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ABSTRACT:
Apicoectomy is indicated when conventional approaches for treatment of endodontic lesion have failed. The surgery is particularly extensive and patient selection requirements include a high level of patient motivation to ensure treatment success. Any surgery in general poses challenges in an elderly person whose body systems are physically compromised. More challenging than those are individuals who do not care about their health and have been appropriately mentioned to suffer from ill-defined syndrome like self-neglect. These issues are psychological in nature and surgical procedures in such cases are modified so that one expects the maximum benefit with minimum patient cooperation. Nevertheless, patient cooperation is essential for all surgical procedures, especially those in the oral cavity. We present a unique and a very rare case of an elderly male patient aged 50 years who presented with severely stained anterior and posterior teeth, enamel erosion of labial surfaces, multiple partial edentulous spaces, multiple carious lesions and a non-healing periapical lesion in relation to maxillary left canine. The patient was educated about his existing condition and a retrograde surgical procedure was performed after endodontic treatment. The decision to do surgery after endodontic treatment was decided on the basis of root anatomy of the concerned canine. The patient was given post-surgical instructions and referred for prosthetic rehabilitation.
Keywords: retrograde filling, endodontic, apicoectomy, surgical endodontic, partial edentulousness

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INTRODUCTION

Recent updated guidelines for apical surgery advocate that case selection should be considered essential to improve the chances of treatment success in difficult cases. The major objective of periapical surgery being to be able to surgically maintain a natural tooth with endodontic lesion that could not be resolved through conventional endodontic procedures. [1] It has also been termed as retrograde surgery since the approach is from the apex of the root. [2] Besides patient selection other clinical factors that include asepsis, infection control, haemorrhage control, cut root face, usage of rotary instruments, the retro cavity depth and width and final seal also influence the treatment outcome. [3] Periapical surgeries have seen a substantial increase in elderly population as there has been a substantial increase in the population of elderly people 20% - United States, 12% - India), [4] and is expected to grow further by the year 2050 (from 670 million to 2 billion) due to increased life expectancy. [5] Developing countries like India has about 7.7% of the elderly population, [6] and due to lack of social security they are totally dependent upon their family caretaking during old age. Elderly people do face multiple issues in terms of being dependent for care of others and one of the most common problems is their maltreatment of others including family members. [7] Among less commonly reported cases are those where an elderly person intentionally neglects himself. The condition has been mentioned as an ill-defined syndrome that characterizes one's inability to meet his own basic needs to the extent that it poses threat to his personal safety and health. [8] It differs from other types of neglect like parental

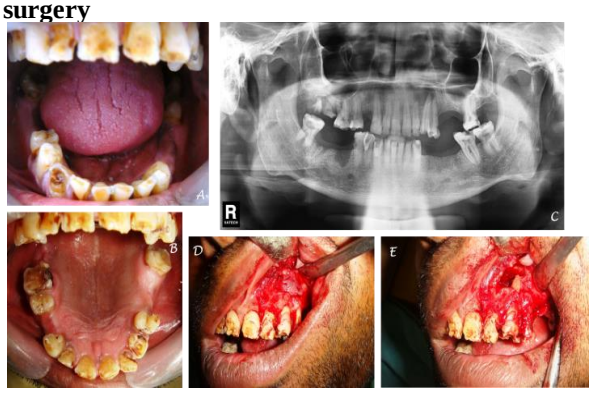
neglect and elderly neglect. [7,9] Oral cavity or mouth can be prodromal to such type of neglect. Symptoms like root caries, high DMF and periodontal index, early loss of teeth with no replacement, non-seeking of dental treatment etc. reflect signs of neglect. Attrition that is severe in the absence of underlying developing disturbances can provide a clue to either type of neglect of the individual. [10]

This article in the form of a clinical case report presents one such rare combination of an elderly patient suffering from self-neglect, and had evidence of severe anterior teeth abrasion and attrition, severely stained and carious teeth including anteriors.

CASE REPORT

An elderly male patient in the early fifties, reported to department of oral medicine with chief complaint of pain in relation to maxillary left canine. The tooth was severely worn and had caries. The diagnosis given by oral medicine was the prosthetic rehabilitation of missing teeth in maxillary and mandibular arches after preliminary mouth preparation that included oral hygiene maintenance program, endodontic treatment and extractions of root stumps. After being referred to department of conservative dentistry and Endodontics, the patient's history revealed that he had chronic pain in relation to maxillary left canine since 9 months which had recently developed acute exaggeration. The patient also claimed to have repeatedly taken antibiotics and anti-inflammatory drugs, but the problem never could resolve permanently. Extra oral examination revealed normal clinical parameters including non-palpable lymph nodes and no evidence of any temporomandibular joint disorder. Intra oral examination revealed severe abrasion of maxillary and mandibular anterior teeth (labial) with stained dentin (Fig 1A).

Figure 1: (A) and (B) Intra oral view of the patient showing severe abrasion and attrition of maxillary and mandibular teeth (C) OPG showing the status of natural dentition with a periapical lesion in relation to maxillary left canine (D) flap reflected in the periapical region showing cystic lining in relation to the involved tooth (E) removal of the lesion which was followed by peri radicular surgery



Maxillary left canine had developed severe caries under previously filled composite restoration with the gross destruction of the lingual surface (Fig 1B). The mandibular right canine (Fig 1A) also presented with the same condition although the caries did not affect the pulp. Palpation of the area revealed a soft and fluctuant swelling in the labial vestibule. Orthopantographic examination revealed a large unilocular radiolucency in relation to the involved canine. The radiolucency was well defined at borders. The patient had a Kennedy class 3 modification one in mandibular and maxillary arches (Fig 1C). Intra oral periapical radiograph revealed a clear demarcated periapical lesion suggesting the development of a periradicular cyst in relation to the involved tooth. The root apices were deflected distally due to the pressure exerted by the cyst. Multiple poorly fabricated composite restorations were present in maxillary and mandibular anteriors. In addition, most of the existing teeth had developed extensive caries lesions that needed immediate attention. In addition to maxillary left canine, seven more teeth in an entire arch needed immediate restorative or endodontic treatment. To complete the diagnosis fine needle aspiration was done which revealed brown coloured fluid that contained acute inflammatory (polymorpho nuclear leukocytes and epithelial) cells under microscope. The provisional diagnosis based on clinical and histopathological examination was infected periradicular cyst. Patient was presented with a treatment plan by the department of Prosthodontics that included extraction of root stumps in relation to maxillary right second and third molars, restorative and/or endodontic treatment of involved teeth, followed by fabrication of a fixed partial denture in relation to maxillary right missing first premolar and a cast partial denture for both maxillary and mandibular arches. Endodontic treatment plan included surgical excision and biopsy of involved lesion. Enucleation of the cyst was performed using high standard regulations of infection control and asepsis as provided by current guidelines in relation to the covid 19 pandemic. [11]

Endodontic treatment was carried under rubber dam isolation with an international organization for standardized endodontic files (K-file, Dentsply Maillefer, Switzerland) that were regularly irrigated using 0.5% sodium hypochlorite (Shivam Industries, India). Smear layer removal was accomplished using 17% ethylenediaminetetraacetic acid (EDTA) solution (Prevest Denpro, India). Medication of the canal was performed using ApexCal paste (Ivoclar Vivadent AG, Schaan, Liechtenstein) while temporary restoration (Pyrex Exports, India) was placed at the end of each endodontic appointment. Final obturation was accomplished with gutta percha (Meta BioMed, Korea) and AH-Plus root canal sealer (Dentsply Detrey GMBH, Germany).

The surgical procedure was initiated using a long duration local anaesthetic, careful incisions were

placed so as to avoid obliteration of the vestibule upon healing (Fig 1C). Osteotomy in the range of 2 to 3 mm was performed in areas where it was anticipated that the cyst will be difficult to remove. After careful release of cyst from surrounding surface, the cyst was removed and sent for pathological examination (Fig 1D). Presence of intact bone over the adjacent teeth was ascertained and the surgical wound was closed by the flap. After removal of the pathological tissue and control of adequate hemorrhage the root end was cut from 3 mm the plane of which were perpendicular to the long axis of the tooth. Methylene blue (2%) dye aided in inspection of the cut root face of possible areas of leakage. The root end cavity was prepared using sonic driven micro tips. [12] The retro cavity had a depth of 3 mm which was filled by mineral trioxide aggregate (MTA) (Angelus, Londrina, PR, Brazil) which has excellent biocompatibility. An intra oral dressing was placed and the patient was instructed for post-surgical care. The patient was put on follow up at 1 day, 1 week, 3 months and one year. The patient did not report after one week follow up.

DISCUSSION

The radicular or periapical cyst is one of the most common cystic lesion seen in association with natural teeth. Seen common in relation to the apex, they can however be found associated with lateral accessory root canals which mandate the retro cavity to include such presence. [13] This case, however, presents the presence of a radicular cyst associated with maxillary left canine in a self-neglected natural dentition that had evidence of severe abrasion and attrition, root caries, secondary caries under composite restorations and probable future endodontic treatment of 7 more teeth. The neglect was also evidenced by the patient's inability to turn for long term follow up. Presence of severe attrition is usually seen in developmental anomalies of teeth like amelogenesis and dentinogenesis imperfecta classified on the basis of genetic inheritance of histopathology. [14] Human neglect is complex and it occurs at every level of human growth. When a child is neglected it is termed as parental neglect and when an older parent suffers, it has been termed elder neglect. Since an adult is independent there are no terms for his neglect and the onus in adulthood is self-neglect rather than being neglected by someone. It has been reported that self-neglect could be associated with parental neglect when the person was a child. Irrespective of the type, the influence of such psychological factors has a profound effect on one's health. Non communication disorders like obesity has been found to have influences in both cause and prevention of parental neglect. [15] In elderly people certain medical conditions and the process of aging can mask the markers of their maltreatment, [16] which is why it has been reported that oral cavity and dentists could be the first to identify such influences. [17] However, it has been also said that the manifestations may be similar and the two can be differentiated by the patient's unwillingness to improve his well-being, [18] which was evident in this case. Despite repeated problematic symptoms the patient did not seek absolute treatment. The patient reported that over the past 9 to 10 months he had taken medicine around 4 times and the condition was resolved on its own. Radicular cysts are usually symptom less and are diagnosed routinely while some cases may present with a swelling that grows slowly. [19, 20]

Radicular cyst is basically a cyst of odontogenic inflammatory origin that is preceded by the formation of a chronic granuloma and cells rest of molasses. [21] Other sources include crevicular epithelium, sinus lining or fistula epithelial components. [22] Depending upon the size of the lesion, the treatment can range from conservative approach (endodontic treatment) to the surgical approach. When large, it is subjected to decompression first, followed by enucleation of the cyst. [22] Endodontic treatments are generally the first line of treatment in such cases as it resolves the size of the cyst especially if infected. The obturation of the root canal prevents microorganisms percolate to radicular tissues, thereby reducing the source of infection causing microorganisms. [23] In this case, however, one of the possible causes of exaggeration could be either bacteria within the pulp or even the bacteria present in the plaque surrounding the tooth. There was no barrier seen clinically since the tooth structure loss was till the gingival third of the entire lingual surface. The plaque biofilm that collects around the neck of the tooth has been reported to initiate an immune response of the host that is inflammatory in nature. [24] Tooth destruction in the coronal aspect affects the crown root ratio of teeth, which is essential to determine the service of the tooth as an abutment for a fixed partial or removable partial denture treatment. [25] This was eventually the problem in this case as canine and premolar were to be used to support a cast partial denture component.

CONCLUSION

A case presentation of a young elderly person who presented with clear signs of self-neglect and was suffering from acute pain in natural teeth was successfully treated using both conventional endodontic and surgical procedures. Despite patient education programs during the treatment, the patient still did not appear for long term follow up visit. The influence of self-neglect on treatment should be further investigated in the field.

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CONFLICT OF INTEREST

None declared

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