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Case Report

Incision and drainage as mainstay therapy in antibioma: A case report

Fathima S[1]*, Suchithra M S[1], Rita Zarina A[1], Jaziya Z[1]

[1] *Dept. of Pediatric & Preventive Dentistry, Government Dental College, Thiruvananthapuram, Kerala, India*

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ABSTRACT

Antibioma is a chronic sterile, tough fibrous abscess formed commonly due to prolonged and inappropriate use of antibiotics for infections, without facilitating proper drainage of the pus. It is a localized swelling which is painless, smooth, non-tender and firm on palpation. It is only after the abscess has been incised, the body defence mechanism and antibiotic can eradicate the infection by releasing pressure, increasing blood circulation and oxygen to the anaerobic environment. Here, a rare case of antibioma in the neck of an 8 year old male child who had undergone extraction of an offending tooth to eradicate the infection. However, inadequate drainage of the abscess and lack of proper postoperative follow-up led to persistence of residual infection.

1. Introduction

Dental abscesses or periapical infections typically arise secondary to dental caries, trauma, or failed dental root canal treatment and are primarily managed by surgical intervention comprising of decompression or drainage. It is better to proceed with decompression at the earliest, thereby preventing the spread of infection in tissue planes and mounting of pressure under the skin.

If proper drainage of pus is not established and treated only by antibiotics, pus localizes and becomes sterile (flaques) with a thick fibrous tissue cover leading to a condition known as antibioma. It is characterized by localized swelling which is painless, smooth, non-tender, and firm on palpation.[1] The established treatment for antibioma is to surgically incise and drain it like an abscess under analgesics and sometimes antibiotics.[1]

1.1. Pathophysiology of Abscess

An abscess consists of (i) a central cavity containing pus, which is essentially liquefied necrotic tissue along with dead polymorphs and bacteria like Peptostreptococcus, Prevotella, Fusobacterium, Actinomyces etc[2] (many of the latter are alive) and (ii) a surrounding wall, the inner layer of which is again necrotic tissue (not yet liquefied) called slough, the outer layer is an acutely inflamed tissue profusely infiltrated with polymorphs, the pyogenic membrane. As the abscess expands, more living tissue is converted to slough and the slough in turn to pus. If the natural and acquired resistance of the host is adequate, the pyogenic membrane is rapidly replaced by granulation tissue which prevents the systemic invasion of bacteria.[3] Other pyogenic organisms e.g. the Streptococcus B Haemolyticus, by contrast, cause a spreading cellulitis and suppuration only at an advanced stage of infection.[3]

Once an abscess has formed, an antibiotic cannot penetrate the avascular slough lining the cavity. It is only after the abscess has been incised and the slough scraped away that the antibiotic as well as the body's own cellular

* *Corresponding author*.
E-mail address: famiabdu2021@gmail.com (Fathima S).

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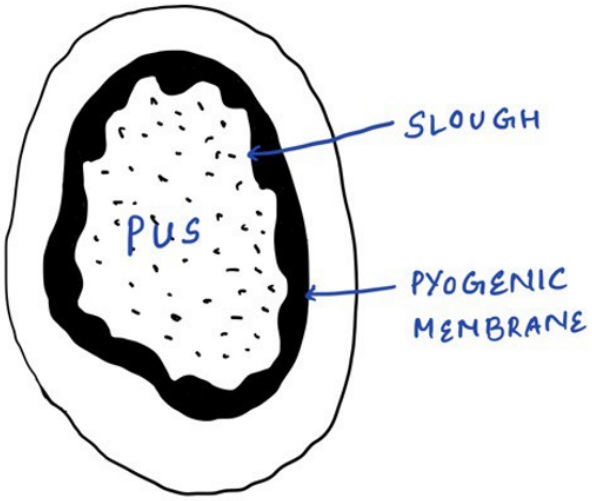

Figure 1: An abscess

and humoral defenses gain access to the cavity and eradicate the infection.[3] Draining releases pressure from the area and facilitates good recovery by providing oxygen to an anaerobic environment, increasing blood circulation, and thereby optimizing host defence mechanisms.[4]

Antibioma in distinct neck spaces has rarely been reported in healthy children. Here, a rare case of antibioma in the neck of an 8-year-old male child who had undergone extraction of an offending tooth to eradicate the infection. However inadequate drainage of the abscess and lack of proper postoperative follow-up led to persistence of residual infection.

2. Case Report

An 8-year-old male patient reported to our department in June, 2021 with a chief complaint of a swelling on the right side of the neck for the last six months. The patient was in good general health with no reported systemic problems. It started as a small peanut sized swelling on the right side of the neck, which was incidentally noticed by the parent 6 months back. It was left unattended as it was not painful until there was a noticeable increase in the size of the swelling with an associated dull pain and tenderness. The child was initially taken to an ENT Surgeon and antibiotics & analgesics (Syrup. Azithromycin 200mg/5ml, 5ml thrice daily & Syrup. Paracetamol 250mg/5ml, 5ml thrice daily) were prescribed for a period of 5 days and the same course of antibiotics was repeated for another 10 days as the swelling was not resolving. Then the child was referred to a nearby private dental clinic as his ears, nose and throat were normal, but a carious, asymptomatic mandibular primary first molar was found on the right side. The offending chronically infected tooth was extracted and antibiotics (Syrup. Amoxycillin plus Clavulanic acid [457 mg/5 ml] 2.5 ml thrice daily, Syrup. Metronidazole [400mg / 5ml] 2.5ml twice daily & Syrup. Paracetamol [250mg/ 5ml] 2.5 ml 4 times daily) were prescribed for another 5 days. The child was then referred to Government Dental College, Thiruvananthapuram, a tertiary health care centre for expert management.

Extraoral examination revealed a demarcated yet somewhat diffuse swelling of size 25 mm* 20mm in the neck near right submandibular region which was firm in consistency, movable and non-tender on palpation (Figure 2). Right submandibular lymph node was also palpable. Intraorally extraction site of 84 showed adequate healing. OPG revealed a clean socket of extracted 84 with no evidence of any residual periapical pathology. The erupting tooth bud of 44 had an intact bony crypt and a normal surrounding trabecular pattern (Figure 3). Radiograph taken before the dental extraction was not available. Blood investigations results were normal except a mildly raised ESR (11 mm/hr). USG examination of right submandibular region showed a large heterogenous hypoechoic lesion measuring 32* 10*10 mm (Figure 4). The lesion was seen separate from and medial to submandibular gland margins and appeared ill defined & with no vascularity on Doppler suggestive of lymphadenitis with abscess formation. Considering the patient history and clinical presentation, a working diagnosis of antibioma was made. Treatment plan was to surgically incise and drain it like an abscess, with the possible outcomes and related scarring explained to the parent. Informed consent from the parent and assent from the child were obtained before treatment and also for using child's data for the purpose of a research publication.

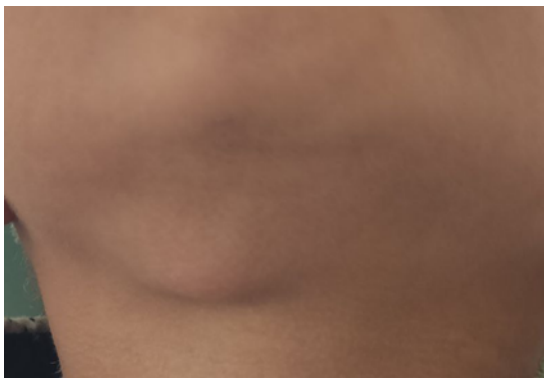

Figure 2: Diffuse swelling of size 25 mm* 20mm in the neck near right submandibular region

Patient was put on close follow up until the lesion got more localised. No antibiotics were prescribed during this period. After a period of 1 week the abscess appeared to be more localised with some signs of pointing (Figure 5); hence incision & drainage was carried out under local anaesthesia.

Figure 3: Clean socket of extracted 84 with no evidence of residual periapical pathology and surrounding alveolar bone showing normal trabecular pattern

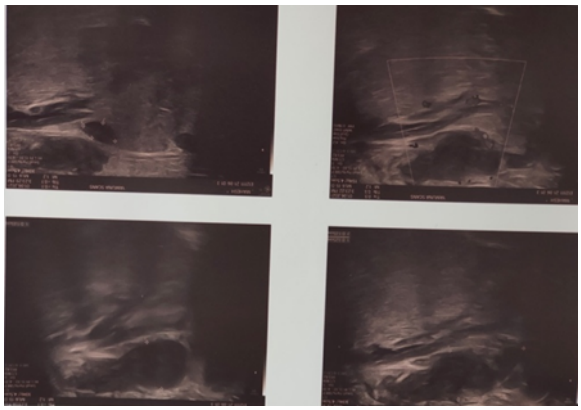

Figure 4: USG showing a large heterogenous hypoechoic lesion measuring 32* 10*10 mm in the right submandibular region

Figure 5: Abscess appeared to be more localised and pointed

2.1. Steps of the surgical procedure

1. Sterile gloves were put on after proper scrubbing up. The skin was cleaned with povidone iodine (7.5% w/v) and surgical spirit in the usual way and the drape was arranged.
2. Since the abscess was situated in a deeper plane, incision was put cautiously using 7 No 11 Bard Parker blade over the most prominent part of the swelling (Figure 6) and final thrust into the cavity was achieved by means of a haemostat forceps. Jaws of the instrument were opened while withdrawing (Hilton's method) and the incision was extended with the knife blade in order to de-roof the abscess sufficiently.
3. FNAC was attempted but no pus could be aspirated. Since it was a small abscess, the slough lining was abraded by means of a pledget of gauze held on a haemostat (peanut swab) to break the loculi and the slough was scrapped off until fresh blood started to ooze out. Blunt dissection was done with artery forceps and the neck space was explored. Irrigation was done with povidone iodine and normal saline. Povidone iodine-soaked gauze drain was placed into the tunnel which was created.
4. Rubber drain was secured using generous gauze-cotton-gauze with tape
5. The patient was seen after 24 hours of drainage in order to remove the drain and to inspect the cavity. The dressing was clean and the site showed only slight inflammatory oedema (Figure 7). Hence, a dressing with T. Bact (Mucoprin 2% w/w) was applied and was secured with medical adhesive tape.

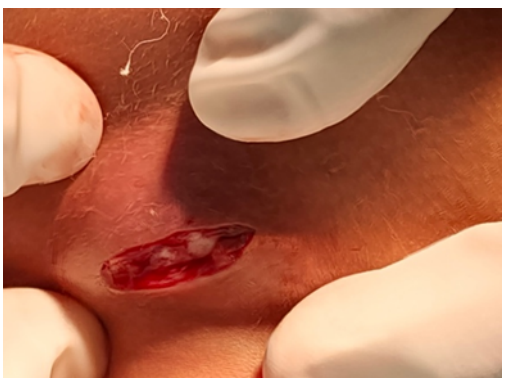

Figure 6: Incision to de-roof the abscess

The dressing was changed on 2^{nd} and 3^{rd} post-operative days and then discontinued. Patient was advised to get the surgical area cleaned every day from a medical centre near his home as he was residing in a far-off place. The child was taken to Primary Health Centre, Varkkala for regular wound cleaning. On the 7^{th} post operative day he was reviewed (Figure 8) and the surgical site showed signs of healing with

Figure 7: Dressing showing no pus

no pain and the capsule was also dissolving. Figure 9 shows the surgical site after 3 months of regular follow up.

Figure 8: Post-operative view after 7 days

3. Discussion

Antibioma is a tough walled abscess that results when an abscess is treated with antibiotics, without proper drainage; there will be fibrosis around the abscess cavity and fluid in it may get absorbed making pus thicker. Injudicious use of antibiotics and inadequate surgical drainage may result in the formation of sterile collections which may not respond to further medical therapy.[5] Here, we discuss a case of antibioma in an 8-year-old male child due to inadequate drainage of the abscess that lead to persistence of infection.

Abscesses should be incised and drained once they become fluctuant. If allowed to progress to an advanced stage, considerable destruction of the affected tissue will occur and the overlying skin will get necrosed. Throbbing

Figure 9: Post-operative view after 3 months

pain which keeps the patient awake at night, redness, heat and a brawny oedema of the overlying and surrounding skin are early warning features.[3]

Apart from the conventional treatment of surgically incising and draining it like an abscess, the various treatment options in the management of antibioma are triamcinolone injection, triamcinalone acetonide in combination with broad spectrum β-lactam antibiotic,[6] regular dressing over the swelling using magnesium sulfate (Epsom salt) and glycerin.[1] Triamcinolone is used to break the outer fibrous capsule and it, can suppress vascular endothelial growth factor, inhibit fibroblast proliferation, and can induce scar regression.[7] Magnesium sulfate works by drawing the infected pus to the surface of the skin before rupturing and leaking out, thereby reduces the swelling.[1] There is minimal review of literature available regarding other interventions and surgical drainage remains as the mainstay therapy. Sometimes antibiotic treatment is needed to halt local spread of infection and to prevent hematogenous dissemination.

Odontogenic infections are associated with a variety of microorganisms and dentists do not routinely investigate which bacterial species is responsible for the infection. Penicillin is the first choice in managing odontogenic infections as it is effective against gram-positive aerobes, intraoral anaerobes, organisms found in alveolar abscesses, periodontal abscesses, and necrotic pulps. The overuse of antibiotics has resulted in bacterial mutations, and there are strains of Staphylococcus aureus resistant to a variety of antibiotics including vancomycin.[8] There is a steady increase in the number of methicillin- resistant Staphylococcus aureus infections.[9] The polymicrobial environment of odontogenic infections persists until the source of irritation is removed. The vast majority of localized odontogenic infections can be successfully treated by appropriate dental treatment alone.[4]

The prescription of antibiotics in dental clinics has increased from 6.7% to 11.3% in recent years.[10] India ranks first among all countries of the world in total consumption of antibiotics for human use and has been referred to as "the antimicrobial resistance capital of the world".[11] Antibiotic use by dentists affects flora that exist beyond the oral cavity and are distributed throughout the body. The frequent exposure to broad-spectrum antibiotics, predisposes to selection of resistant strains and drug resistance.[12]

As medical practitioners are not experts in the treatment of dental problems, it would not be surprising to find them prescribing inappropriately for dental infections that may only require surgical or mechanical intervention. Guidelines and education regarding prescribing antibiotics for dental infections need to be targeted to medical practitioners as well as dentists.

4. Conclusion

Antibiotics should be considered as an adjunct to appropriate management of odontogenic infections. Antimicrobial stewardship program must be well promoted and should include evidence‑based education for dentists about appropriate antibiotic drug, dose, dosing interval, and duration to make them more confident in the prudent use of antibiotics. Incision and drainage help in scraping away the slough in an antibioma, thus body's own cellular and humoral defences gain access to the cavity and eradicate the infection.

5. Source of Funding

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6. Conflict of Interest

None.

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Author biography

Fathima S, Senior Resident https://orcid.org/0009-0001-0350-0962

Suchithra M S, Additional Professor and HOD https://orcid.org/0000-0002-4560-9130

Rita Zarina A, Professor & Head

Jaziya Z, Senior Resident

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