Original Research Article

OVERVIEW OF MANAGEMENT OF NASAL SEPTAL ABSCESS IN A PRIVATE FACILITY IN LAGOS, NIGERIA

Abstract

Background: Nasal septal abscess is an uncommon nasal disorder. Commonly present lately, so its management must be meticulous and urgent.
This study aimed at determining the clinical presentation, diagnosis and management of septal abscess in our center.
Method: This was a prospective hospital based study of consecutive patients diagnosed with nasal septal abscess over a period five year at a private facility, Golden cross infirmary, Lagos, Nigeria. Consented patients were enrolled into the study. Data obtained were collated and analysed using SPSS version 18.
Results: Forty seven patients were enrolled into the study. Male were 32 (68.1%) while female were 15 (31.9%) with male to female ratio of 2:1.
The peak age group incidence were ≤10 and 41-50 years age group.
Duration of illness at presentation was within a week in 14 (29.8%), two weeks in 4 (8.5%) and three weeks in 29 (61.7%). Sources of referral were mainly from general practitioner in 19 (40.4%), and family physician in 24 (51.1%).
Majority of our patients 45 (95.7%) were seen at ENT outpatient clinic while 1 (2.1%) at casualty (accident and emergency).
Clinical features at presentation were 47 (100%) nasal blockage, 43 (91.5%) difficulty breathing, 38 (80.9%) nasal pain, 45 (95.7%) rhinorrhea, 26 (55.3%) mouth breathing, 19 (40.4%) Snoring, 28 (59.6%) headache, 12 (25.5%) poor appetite and 8 (17.0%) fever.
Haematoma/abscess was bilateral in 43 (91.5%) cases. Needle aspiration of the nasal septum confirmed haematoma in 4 (8.5%) and abscess in 43 (91.5%). Aspirates microscopy, culture, and sensitivity tests were negative in 7 (14.9%) with growth of 23 (48.9%) Staphylococcus aureus, 15 (31.9%) Streptococcus spp and 2 (4.3%) Hemophilus influenzae.
Implicated aetiological factors were complicated rhinosinusitis in 31 (66.0%), trauma in 9 (19.1%) furunculitis/vestibulitis in 5 (10.6%) and idiopathic in 2 (4.3%).
All our patients had combination of surgery (incision and drainage with drains), antibiotics, analgesic and daily dressing. Complications recorded were 3 (6.4%) recurrence, 37 (78.7%) septal oedema and 6 (12.8%) facial cellulitis.
Conclusion: Nasal septal haematoma/abscess are uncommon. Sinonasal infection and trauma were identified as the main aetiological factors. Prolonged nasal obstruction not responding to nasal decongestant is the main pointer to early diagnosis. Immediate surgical intervention are essential to prevent avoidable complications

Keywords: Nasal septal abscess, septal hematoma, incision and drainage, rhinosinusitis, culture and sensitivity.

Introduction

The nose is a special sensory organ of olfactory occupying the middle third of the face and the most prominent facial structure making it to be proned to most injuries on the face [1]. The nasal septum is the midline bone and cartilage structure in the nose that separates the nasal cavity into two nostrils.

Nasal septal hematoma and abscess is defined as blood or pus collections between the bone or cartilaginous septum and the mucoperiosteum or mucoperichondrium [2]. Nasal septal hematoma/abscess are not common disorder and the real prevalence is not well established [2,3].

Increase in level of awareness of nasal septal hematoma/abscess has changed through the years and in different centers.

It is very important to examine the nasal septum of all individuals who have suffered a trauma and also during conduct of nasal clinical or radiological examination [4,5].

There is gender predisposition to nasal injuries and septal hematoma/abscess. There was predominance of male patients to septal hematoma/abscess.

There are different aetiological causes of nasal septal hematoma/abscess. The most studied and most common causes are injuries that ranges from surgery, domestic, assault, industrial, sport activities to accidents.

Other causes are infection of facial structures such as dental abscess, ethmoid and sphenoid sinusitis, and nasal furunculosis [6-8]. However, in clinical diagnosis, absence of antecedent facial or nasal trauma, should prompt the possibility of other sources like nasal septal infection.

Pathophysiology of nasal septal hematoma with subsequent to nasal injury is poorly understood [9-11]. There were some mechanical forces which applied against the cartilage that result in rupture of vessels of the mucoperichondrium. When there is associated cartilage fracture, the blood vessel can be dissect through the fracture line and cause bilateral hematoma. Accumulated hematoma expand and mechanically obstruct the vascular supply of the nasal cartilage, leading to avascular necrosis induced by pressure within three to four days. The accumulated hematoma and necrotic tissue are good culture media for bacterial such as Staphylococcus that colonizes the nasal mucosa with resultant formation of abscess.

The common clinical manifestations at diagnosis are nasal obstruction, mouth breathing, nasal pain, local fluctuation, deformed nose, tender on palpation and reddish edema of septal mucosa [12]. Test aspirate may produce blood in hematoma or pus in abscess.

Aspirate from nasal septum must be investigated. Microscopic culture and sensitivity usually revealed offending organisms. Common isolated organisms are Staphylococcus aureus, Staphylococcus viridans, Enterococcus faecalis, Streptococcus pyogens, Streptococcus pneumoniae and Hemophilus influenza [13]. Anaerobes and coliform microorganisms are less commonly isolated. Fungal agent has been implicated in immune compromised individuals. Further investigation includes computerized tomography scans in suspected cases of intracranial complications.

Nasal septal hematoma/abscess is associated with cosmetic complication such as septal oedema, facial cellulitis, osteocartilaginous necrosis and saddle nose [14,15]. Intracranial complications are due to cranial extension of the diseases. This includes subarachnoid empyema, meningitis and cerebral abscess. Routes of intracranial extension are vascular (venous or lymphatic), fracture lines, suture lines, surgical wound and direct bone erosion by the diseases.

Nasal septal hematoma/abscess are treated by both surgical and medical approaches. There is paucity of literature on the nasal septal hematoma/abscess and its management in Nigeria. This study is aimed at determining the septal hematoma/abscess aetiology, clinical features, complications, and management in a private facility in Lagos .

Materials and methods

This was a prospective hospital based study of all patients with diagnosis of nasal septal abscess. All consecutive patients who presented with diagnosis of nasal septal abscess at the

Golden cross infirmary, Lagos were enrolled into the study. The study was carried out over a period of 5 years (January 2011 to December 2016).
Ethical clearance was obtained from the ethical committee of the hospital.
Informed consent was obtained from patients/guardian/parents before patients were enrolled into the study. Consented patients were prospectively studied.
Interviewer assisted questionnaire were given to patient to obtain detailed history on biodata, and occupation. Detailed otorhinolaryngological history was taken from the patient/guardian/parents. Detailed history on possible aetiological causes and predisposing factor were taken. Past medical, surgical, family and social history were taken. General physical and systemic examination were performed. Thorough nose, ear, throat, head and neck examination were done and documented. Thorough rhinological examination includes anterior rhinoscopy, nasal cavity and nasal septal examination. Aseptic needle aspiration of the nasal septum was performed and the aspirates was examined and sent for microscopy, culture, and sensitivity.
All the patients were educated based on the findings and the line of management of the nasal septal hematoma/abscess. Patient were then booked for incision and drainage. The procedure was performed under local or general anesthesia depending on the patient clinical status. Under local or general anesthesia a vertical incision was made over the point of maximum fluctuance. The abscess loculi are broken and the septal cavity was irrigated with 0.9% saline solution and packed with Vaseline gauze impregnated with gentamicin cream. Appropriate analgesic and broad spectrum antibiotics were prescribed and adjusted with result of aspirate culture and sensitivity. Depending on patient postoperative state the patient were either treated as day case or admitted. Participant was followed up in the ear, nose and throat clinic for possible outcome and complications.
All data obtained were documented, collated and analysed. The data analysis was done by using SPSS version 18.

Results

There were 47 consented participants. Male were 32 (68.1%) while female were 15 (31.9%) and male to female ratio was 2:1.
Table 1 showed age distribution of the study population. The peak age group incidence were ≤10 years age group and 41-50 years age group.
Duration of illness prior to presentation revealed as follows: 4 (8.5%) patients at 1week, 14 (29.8%) patients at 2weeks, and 29 (61.7%) patients at 3weeks. This is illustrated in figure 1.
Sources of referral of the patients with nasal septal abscess presenting in our ear, nose and throat department were by 43 (91.5%) general practitioner, 1 (2.1%) casualty officer and 3 (6.4%) others. .
Majority of the patients presented in otorhinolaryngological outpatient clinic while minority presented in emergency ward. These were: ENT outpatient clinic in 45 (95.7%), casualty (accident and emergency) in 1 (2.1%) and hospital wards in 1 (2.1%) as shown in figure 2.
Table 2 shown clinical features of the patients at presentation and were 47 (100%) nasal blockage, 43 (91.5%) difficulty with breathing, 38 (80.9%) nasal pain, 45 (95.7%) rhinorrhea, 26 (55.3%) mouth breathing, 19 (40.4%) snoring, 28 (59.6%) headache, 12 (25.5%) poor appetite and 8 (17.0%) fever.
The hematoma/abscess was bilateral in 43 (91.5%) cases, 3 (6.4%) in the right and 1 (2.1%) in the left side of the nasal septum as illustrated in figure 2.
Needle aspiration of the nasal septum confirmed hematoma in 4 (8.5%) cases and abscess in 43 (91.5%) cases.
All the aspirates from the nasal septum were sent for microscopy, culture, and sensitivity tests. Negative culture were noticed in 7 (14.9%). Positive culture were noticed in 40 (85.1%)

aspirates. The analysis revealed 23 (48.9%) Staphylococcus aureus, 15 (31.9%) Streptococcus spp and 2 (4.3%) Hemophilus influenzae. This is shown in table 3.

Detailed history on aetiological factors revealed complicated rhinosinusitis in 31 (66.0%) while trauma in 9 (19.1%), furunculitis with vestibulitis in 5 (10.6%) and idiopathic in 2 (4.3%). This is illustrated in figure 3.

Prior to presentation at our department most participants 44 (93.6%) had used some form of self-medication such as 34 (72.3%) antibiotics, 11 (23.4%) decongestants, 38 (80.9%) analgesic and 42 (89.4%) vitamins.

All our patients had combination of surgery (incision and drainage with drains), antibiotics, analgesic and daily dressing until abscess cavity was cleared. Incision and drainage was done under local anaesthesia in 23 (48.9%) and general anaesthesia in 24 (51.1%). Antibiotics were changed in 15 (31.9%) based on microscopic, culture and sensitivity result and some patients response to earlier prescribed treatment. All the study population were successfully treated and discharged home. Participants were followed up as outpatient over 6 weeks. No defaulters among all our participants. Recurrency were noticed in 3 (6.4%) and further complications were 37 (78.7%) nasal septal edema and 6 (12.8%) facial cellulitis.

Table 1: Age group distribution of patients with nasal septal hematoma/abscess

Age group	Number of participants	Percentage (%)
≤10	11	
11-20	8	
21-30	5	
31-40	6	
41-50	14	
≥51	3	

Figure 1: Duration of illness.

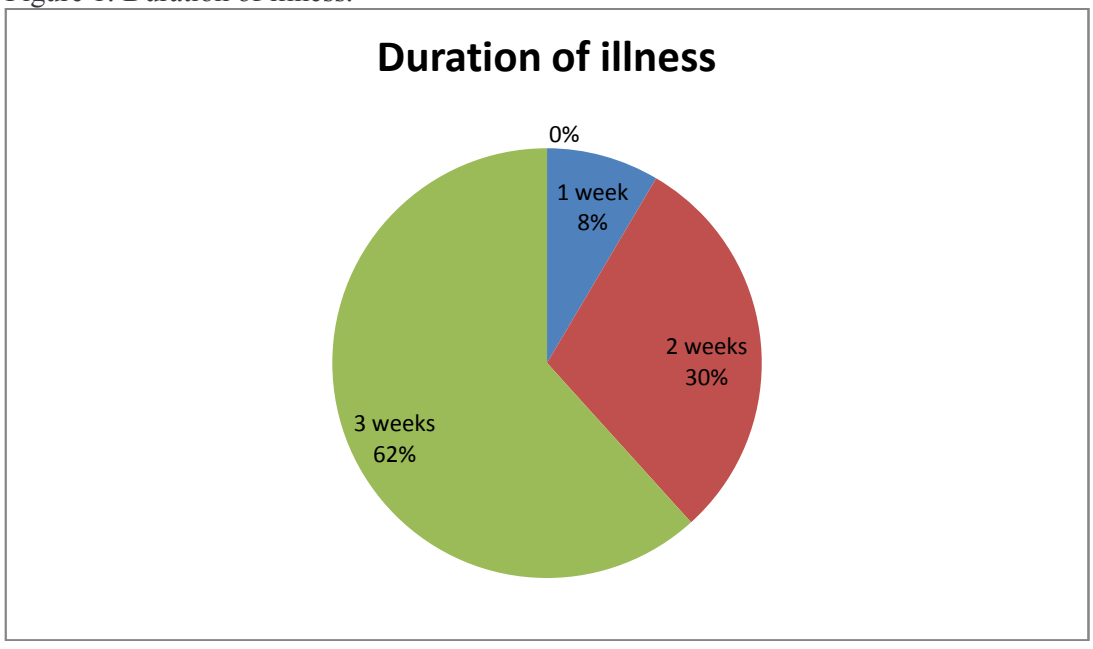


Figure 2: Presentation of nasal septal hematoma/abscess to the department

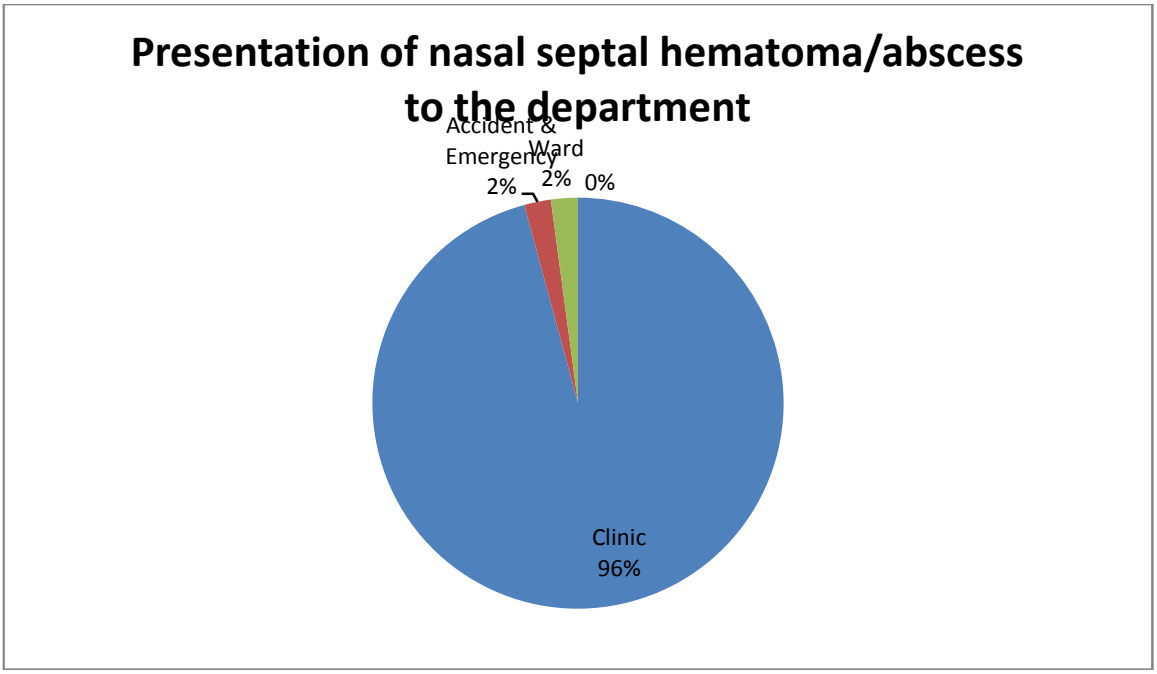


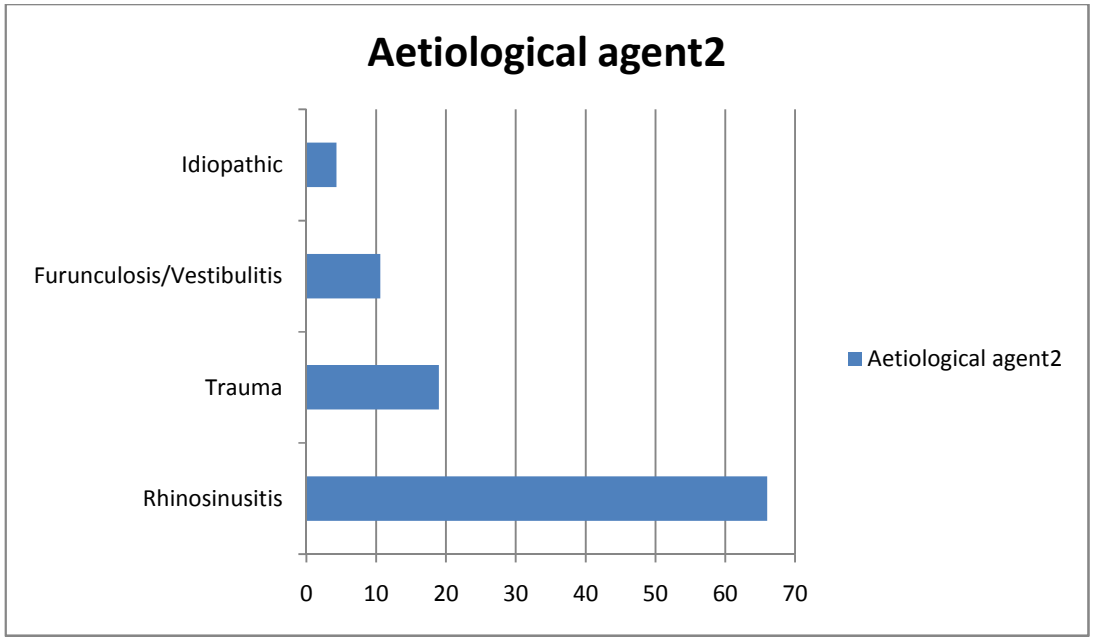
Table 2: Clinical presentation of patients with nasal septal hematoma/abscess

Symptoms	Number of patients(n)	Percentage (%)
Nasal blockage	47	100
Difficulty breathing	43	91.5
Nasal pain	38	80.9
Rhinorrhea	45	95.7
Mouth breathing	26	55.3
Snoring	19	40.4
Headache	28	59.6
Poor appetite	12	25.5
Fever	8	17.0

Table 3: Isolated microorganisms from nasal septal hematoma/abscess

Microorganisms	Number (n)	Percentage (%)
Staphylococcus aureus	23	48.9
Streptococcus	15	31.9
Hemophilus influenzae	2	4.3
Nil growth	7	14.9

Figure 3: Aetiology agent of nasal septal hematoma/abscess



Discussion

Nasal septal haematoma/abscess are uncommon sinonasal disorders worldwide. This is evidenced by diagnosis of only 47 cases during this 5 years study in our center [12-17]. The rate of occurrence of nasal septal hematoma/abscess varies in different studied communities [12]. In our study 68.1% males participants were twice females participants (M:F =2:I) and previous studies revealed a strong male predominance in hematoma/abscess of the nasal septum [16]. Males are more commonly involved in accident and violence than females. Men are proned to accident such as road traffic accidents, industrial and domestic accidents due to their role in the family than females. Male are also at greater risk of exposing to infection than female, hence developed nasal septal hematoma/abscess than female.

Nasal septal haematoma/abscess affect all age group. This is noted to be commoner in children in some series [16]. Their findings was that the muco-perichodrium is not closely bound down to the cartilage in children compared to adults. Mild trauma can easily lead to collection of blood into the subperichondrial space from the torn blood vessels of the submucosal blood vessels. Our study revealed bimodal age group peaks at (≤10) and (41-50) age groups This may be due to the findings of infection as a major cause of nasal septal hematoma/abscess. Trauma was major aetiological agent in previous study[17-19]. In this study the major aetiological agent was sinonasal infection like complicated rhinosinusitis. Act of nasal blowing and nasal squeezing in cleaning may lead to rupture of microvessel of inflammed mucosa among these patient. Trauma is responsible for less cases in our series.

Patients with nasal septal hematoma/abscess usually present very late to otorhinolaryngologist, head and neck surgeons. The early stage which is characterized with hematoma in patients with traumatic aetiology or cellulitis in patients with infective aetiology were missed in most patients. Abscess would have been aborted with simple drainage of hematoma or antibiotics with nasal septal cellulitis. Majority 29 (61.7%) of the studied participants present at the third weeks of their disease. This could be the reason for high percentage of 43 (91.5%) patient with nasal septal abscess in this studied population more than 4 (8.5%) patient with hematoma in the same studied population.

Majority 45 (95.7%) of the patients present at our ear, nose and throat clinic compared to 1 (2.1%) at accident and emergency ward. This may be because most of our participant present as cold cases. The patient are mostly stable at presentation. Further literature search revealed few complicated cases at presentation to the otorhinolaryngologist, head and neck surgeon [20]. Patient are not familiar with symptoms of nasal septal diseases and its complications. Sinonasal disease such as acute infective rhinitis are considered to be households and are ordinarily managed with over-the-counter drugs.

In this study the most common clinical features of nasal septal hematoma/abscess was nasal obstruction, found in all the patients . This is the resultant effect of combination of nasal septal inflammation, oedema and accumulation of blood or pus. This compromise the nasal air flow. Work from other studies reported similar findings [21-23]. Subsequently this will lead to mouth breathing with occasional snoring. On clinical examination a bulbous bluish or reddish hue over the nasal septal mucosa is a pointer to nasal septal hematoma/abscess. Complete intranasal examination with anterior rhinoscopy in all cases of nasal septal hematoma/abscess is essential for further findings such as extent of the abscess, intranasal laceration, dislocation and fractures. Needle aspiration was done on the nasal septum for all the participants. The nature of the aspirate will confirm the diagnosis (pus or blood), relieve pressure, and provide specimen for microscopy culture and sensitivity.

Majority of the nasal septal aspirate yields growth of respiratory tract microorganism. This proof that nasal septal abscess in this study were due mainly to sinonasal infections. Majority of isolated microorganisms were staphylococcus aureus, streptococcus and Hemophilus influenzae. This contradict other study which emphasis that nasal septal hematoma/abscess are secondary to nasal and facial trauma [23-25].

In patients with nasal septal hematoma/abscess, computerised tomography (CT) scanning is required. CT scan is necessary to rule out complications such as intracranial extension. CT Scan is indicated with the following findings: extensive facial cellulitis, periorbital cellulitis, meningitis, loss of consciousness and localizing neurological signs and treatment failure.

Complications were recorded in this work which includes recurrent cases, facial cellulitis and nasal septal edema.

Some previous studies revealed complicated cases in their recorded while this study revealed similar record on complications [26-27]. This may be explained by the type and stages of reported cases in the study. Further reason may be virulence of the offending organism, stage of presentation and management techniques.

Conclusion

Nasal septal hematoma/abscess is not a commonly encountered sinonasal condition with high index of suspicion in patient with a long standing nasal obstruction. Infection and trauma are the most frequent etiology. Early presentation of nasal septal hematoma/abscess with prompt diagnosis, and treatment provide a good prognosis. Treatment is by incision and drainage, intranasal packing, with insertion of drain and antibiotics coverage is an effective treatment modality. This preserve the functional and aesthetic of the nose.

References

1. Menger DJ, Tabink I, Nolst Trenité GJ. Treatment of septal hematomas and abscesses in children. Facial Plast Surg. 2007;23(4):239-43.

2. Matthew DJ. Functional Rhinoplasty

Management of Pediatric Nasal Surgery (Rhinoplasty). Facial Plastic Surgery Clinics of North America. 2017;25(2):211–21.

3. Afolabi OA, Salisu A, Adeyemo AA, Ijaduola GTA. Nasal Septal Abscess in Ibadan Nigeria. Tropical Journal of Health Sciences. 2009;16(2):25-7.
4. Verwoerd CDA, Verwoerd-Verhoef HL. Rhinosurgery in children: developmental and surgical aspects. Laryngorhinootologie. 2010;89(1):S46-71.
5. Schwartz JM. Nasal septal abscess. Consultant. 2007;5:47.
6. Walker R, Gardner L, Sindwani R. Fungal nasal septal abscess in the immunocompromised patient. Otolaryngol Head Neck Surg. 2007;136:506–7.
7. Sandel VHD, Davison SP. Three spontaneous occurrences of nasal septal abscess in patients with chronic asymptomatic HIV – the need for early intervention and reconstruction. Ear Nose Throat J. 2009;88:1058–66.
8. Salam B, Camilleri A. Non-traumatic nasal septal abscess in an immunocompetent patient. Rhinology. 2009;47:476–7.
9. Adobamen PROC. Management of nasal septal abscess in Nigeria. Niger J General Pract. 2011;9(2):28–30.
10. Toback S. Nasal septal haematoma in an 11-month – old infant: a case report and review of literature. Pediatr Emerg Care. 2003;19:265–7.
11. Menachem GrossRon Eliashar. Nasal septal haematoma with abscess: an unusual complication of nasal injury. 2004;35(1):1–2.
12. Alshaikh N, Lo S. Nasal septal abscess in children: from diagnosis to management and prevention. Int J Pediatr Otorhinolaryngol. 2011;75(6):737-44.
13. Dirk JM, Ivar CT, Gilbert JNT. Nasal Septal Abscess in Children
Reconstruction With Autologous Cartilage Grafts on Polydioxanone Plate. Arch Otolaryngol Head Neck Surg. 2008;134(8):842-7.
14. Huang PH, Chiang YC, Yang TH, Chao PZ, Lee FP. Nasal septal abscess. Otolaryngol Head Neck Surg. 2006;135(2):335-6.
15. Savage RR, Valvich C. Hematoma of the nasal septum. Pediatr Rev. 2006;27(12):478-9.
16. Sayin I, Yazici ZM, Bozkurt E, Kayhan FT. Nasal septal haematoma and abscess in children. J Craniofac Surg. 2011;22(6):e17–e19.
17. Sanyaolu LN, Farmer SEJ, Cuddihy PJ. Nasal septal haematoma BMJ (Online) 2014; 349.
18.Tien DA., Krakovitz P, Anne S. Nasal septal abscess in association with pediatric acute rhinosinusitis. International Journal of Pediatric Otorhinolaryngology. 2016;91:27–9.
19. LinI IH, Huang S. Nasal septal abscess complicated with acute sinusitis and facial cellulitis in a child. Auris Nasus Larynx. 2007;34(2):241–3.
20. Hassani R, Aderdour L, Maliki O, Boumed A, Elfakiri MM, Bouchoua F, Raji A. Nasal septal abscess complicating acute sinusitis in a child. Archives de Pédiatrie 2011;18(1):15–7,
21. Yi C, Anjali S, Joseph H. Jr. Clinical Communications: Pediatric Spontaneous Nasal Septal Abscess Presenting as a Soft Tissue Mass in a ChildThe Journal of Emergency Medicine. 2017;52(4):e129–e132.
22. Cheng LH, Kang BH. Nasal septal abscess and facial cellulitis caused by community-acquired methicillin-resistant Staphylococcus aureus. J Laryngol Otol. 2010;124(9):1014-6.
23. Khedim A, Ben Slimene S, Faidi A, Mansour S, Bel Hadj Yahia S, Chtioui I, et al. A case of Nasal septum abscess. Médecine et Maladies Infectieuses. 2007;37:S260–S263
24. Huang WH, Hung PK. Methicillin-resistant Staphylococcus aureus infections in acute rhinosinusitis. Laryngoscope. 2006;116:288–91.
25. George A, Smith WK, Kumar S, Pfleiderer AG. Posterior nasal septal abscess in a healthy adult patient.The Journal of Laryngology & Otology. 2008;122 (12):1386-8.
26. Pei-Hsuan H, Yuh-Chyun C, Fei-Peng L. Nasal septal abscess. Otolaryngology - Head and Neck Surgery 2006;135(2):335–6.

27. Tan NWH, Turvey SE, Byrne AT, Ludemann JP, Kollmann TR. Staphylococcus aureus nasal septal abscess complicated by extradural abscess in an infant. J Otolaryngol Head Neck Surg. 2012;41(1):E7-12.