Nasalseptal hematoma/abscess: management and outcome in a tertiary hospital of a developing country

Background: Nasal hematoma/abscess is an uncommon entity, but capable of leading to serious consequences if not handled meticulously, and with urgency.

Objective: To present the management, and outcome of nasal septal hematoma/abscess in a Nigerian tertiary institution.

Method: Consecutive patients diagnosed with nasal septal hematoma/abscess over a 10-year period, treated at the University of Nigeria Teaching Hospital, Enugu, Nigeria, were prospectively studied. The processes leading to diagnosis, treatment, and outcome were sequentially evaluated.

Results: Fifty-three patients (37 males and 16 females), age 5–65 years (with mean age of 23.10 years), were included. Surgical drainage of the hematoma/abscess, intranasal packing with insertion of drain was performed with total resolution of problem in all the cases.

Conclusion: Incision and drainage, and intranasal packing with insertion of drain was effective in treating nasal septal hematoma/abscess.

Keywords: septal hematoma, abscess, facial deformity

Introduction

The nose is the most prominent facial structure. This makes it one of the most injury prone structures in the body\(^1\) and the nasal bone the most commonly fractured bone in the human skeleton. It stands to reason to expect that septal hematoma/abscess will be a common occurrence, however on the contrary, septal hematomas/abscesses are unusual.\(^2\) Most cases of septal hematomas/abscesses arise from the nasal injury.\(^2\)–\(^6\)

Nasal septal hematoma/abscess is a collection of blood/pus between the cartilaginous or bony septum and its adjoining mucoperichondrium or mucoperiosteum. This is commonly caused by trauma. Other etiologic factors noted are nasal surgery, ethmoid or sphenoid sinusitis, dental abscess, nasal furuncle, and tobacco snuffing.\(^3\)–\(^7\)\(^8\) It occurs less frequently after furunculosis of the nasal vestibule, sinusitis, influenza, and dental infections.\(^9\) Spontaneous hematomas have been described.\(^8\) Immunodeficiency\(^10\) from Human Immunodeficiency Virus (HIV), insulin-dependent diabetes mellitus, and sarcoidosis have been reported as etiological factors.

A relatively small percentage of patients with nasal trauma will develop septal hematoma.\(^11\) The hematoma results from leakage or rupture of the mucoperichondrial blood vessels leading to sub-mucoperichondrial/periosteal hemorrhage. A buckling stress tears the sub-mucosal blood vessels. An incidence of 15% has been reported in cases of nasal bone fractures, thus suggesting a fairly strong association.\(^8\) It could be iatrogenic following any kind of nasal surgeries, including major functional endoscopic
sinus surgery, septal surgeries such as sub-mucosal resection, septoplasty, and septorhinoplasty, and a variety of turbinate surgeries.

Septal hematoma/abscess is a surgical emergency that deserves prompt attention because it can produce a significant nasal functional (airway) or cosmetic disturbance, and occasionally, other serious life-threatening complications. This ranges from destruction of the cartilaginous nasal septum, with subsequent saddle deformity of the nose and intracranial complications, including meningitis, cerebral abscess, subarachnoid empyema, and cavernous thrombosis. Depending on the age of onset and the extent and site of septal cartilage destruction/loss, the nose and maxilla can suffer from growth inhibition. In childhood, the nasal septum has two major growth centers, which are thicker (3 mm) than the surrounding cartilage (0.75 mm): the sphenodorsal zone, which stimulates the length and height of the nose, and the sphenosphenal(basal), which is responsible for the development of the anterior nasal spine and the maxilla. If the septal cartilage is completely destroyed, including both the sphenodorsal and the sphenosphenal zones, the outcome after the puberty growth spurt can be an underdeveloped nose with severe saddling and retraction of the columella and a retroposition of the maxilla. This study presents the management and ensuing outcome of nasal septal hematoma/abscess among Nigerians. The etiologies, presentations, and processes leading to diagnosis and treatment were sequentially highlighted.

Patients and methods
Consecutive patients presenting with nasal septal hematoma/abscess at the University of Nigeria Teaching Hospital (UNTH) Enugu over a 10-year period (2004–2014) were prospectively studied. All patients diagnosed with nasal septal hematoma/abscess and treated in the Otolaryngology Department of the hospital were included in the study. Most of the patients were referred directly to the clinic, while the remaining were recruited through the Accident and Emergency Department.

A detailed history was taken from each patient or caregiver, and examination, including anterior rhinoscopy, was done. The biodata, antecedent history, and side of the septum affected were all recorded. The affected nasal cavity/cavities were obstructed with a visible mass. The obstructing nasal mass did not change in size when topical vasoconstrictor xylometazoline hydrochloride (Otrivin®) was applied but fluctuated when probed. Needle aspiration was performed and suspicious aspirates like pus sent for microscopy, culture, and sensitivity. All the patients were admitted and the hematoma/abscess evacuated by incision and drainage under general anesthesia. A vertical incision was made over the point of maximum fluctuance. The septal cavity was irrigated with 0.9% saline solution and Penrose drain inserted. Tight intranasal packing with Vaseline gauze impregnated with gentamicin cream was then applied and left in place for about 5 days to obviate re-accumulation and allow adequate commencement of healing.

Broad spectrum antibiotics were administered and adjusted with result of culture. Where appropriate external splint and taping were applied to prevent dorsal hematoma, reduce edema, and provide adequate protection to minimize the discomfort. The patients were discharged after 7–10 days and seen for follow-up after 4 weeks. Subsequently, they were seen every 2 months for 6 months, during which time, they were re-evaluated to detect any complications or deformities of the nose. They were thereafter expected to be seen every 3 months for another 6 months, a total of 1-year follow-up.

Ethics
Approval for the study was obtained from the Medical and Health Research ethics committee of the hospital and written informed consent to participate in the study was signed by the patients, parents, or caregivers.

Results
Fifty-three patients were studied (37 males and 16 females) ratio 2.3:1 (Table 1). The peak incidence was within the 10–18 years age group followed by 1–9 years age group (Table 2). The age range was from 5 years to 65 years with a mean of 23.10 years. The hematoma/abscess was bilateral in 46 cases, five in the right and two in the left side of the nasal septum (Table 3). Needle aspiration confirmed hematoma in 49 cases and abscess in four cases. The abscess occurred in adult patients aged 49 years, 53 years, 56 years, and 65 years, respectively. In all, 16 patients were adults aged ≥18 years. All the aspirates were sent for microscopy, culture, and sensitivity tests. Only two yielded a positive culture – Staphylococcus aureus. Trauma in some form was identified as an etiological factor in 35 (66.04%), with males, numbering 20 (57.14%), constituting the majority. There was

<table>
<thead>
<tr>
<th>Sex</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>37</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
</tr>
</tbody>
</table>
a positive history of boil (furuncle) in the nasal vestibule of the adults who had abscess. In particular, the oldest, aged 65 years, a female, had, in addition, a positive history of tobacco snuffing. Most cases (90.6%) had used some form of antibiotic self-medication prior to presentation. The remaining 14 cases (26.4%) could not be linked to any identified etiology. One was prompted to class them as imperceptible trauma or spontaneous. The cases of hematoma presented within 10 days of onset of symptoms, while those with abscess presented after more than 2 weeks of onset of their symptoms. All the patients presented with nasal obstruction as the predominant symptom. Other symptoms presented are shown in Table 4.

All the patients were successfully treated and discharged. Follow-up has been possible in all for the first 6 months, but in the subsequent periods, follow-up was possible only in 47 patients. The remaining six patients were lost to follow-up.

Table 2 Age grouping of patients with septal hematoma/abscess

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–9</td>
<td>14</td>
<td>26.5</td>
</tr>
<tr>
<td>10–18</td>
<td>23</td>
<td>43.4</td>
</tr>
<tr>
<td>19–27</td>
<td>4</td>
<td>7.5</td>
</tr>
<tr>
<td>28–36</td>
<td>3</td>
<td>5.7</td>
</tr>
<tr>
<td>37–45</td>
<td>3</td>
<td>5.7</td>
</tr>
<tr>
<td>46–54</td>
<td>4</td>
<td>7.5</td>
</tr>
<tr>
<td>55–63</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>64–72</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>100</td>
</tr>
</tbody>
</table>

Discussion

Across the world, the occurrence of nasal septal hematoma/abscess has been variable over the years.18–20

Nasal septal hematoma may arise after injury to the nose, but also spontaneously on rare occasions.21 It has also been posited that septal hematoma following nasal trauma is probably more common than generally acknowledged.22 The findings in this study were similar (65.2% from trauma) to these.

A relatively small percentage of patients with nasal trauma will develop a septal hematoma.11 While an association between fracture of the nasal bones and septal hematoma has been reported in 15% of cases,6 only two cases out of 241 children with nasal injury studies were associated with fracture of the nasal bones in another.19 In the said study, only 25 (10.3%) of them developed hematoma or septal abscess. Grymer et al23 found no case of nasal septal hematoma in 57 children between 0 years and 10 years with nasal fractures.

Variation as can be seen in the findings of various authors on nasal injuries and septal hematoma/abscess, it calls for caution and meticulous handling of patients to promptly identify and treat those with septal hematoma. History and thorough examination are paramount.

The most common symptom of septal hematoma/abscess in our study was nasal obstruction, found in all the patients. Other studies reported similar findings.3,6,8,19,23–25 An examination suggestive of a septal hematoma will show asymmetry of the septum with a bluish or reddish hue over the mucosa. This was apparent in almost all our cases with the background of trauma. Only a complete intranasal examination in all cases of nasal trauma will detect intranasal fractures, dislocations, lacerations, hematomas, and abscess formation. An intranasal examination with anterior rhinoscopy is the crucial step for diagnosis. The recognition/diagnosis of a septal collection may be enhanced by application of topical anesthetic and vasoconstrictor, followed by palpation of the swelling with blunt instrument like cotton-tipped probe or applicator. Needle aspiration, as was done in our cases, will confirm the diagnosis, relieve pressure, and provide a specimen for microbiologic examination before definite drainage and nasal packing. Routine preoperative needle aspiration has been suggested by Ambrus et al3 who hypothesized that in nasal septal abscess needle aspiration before drainage will reduce the pressure and may decrease the spread of infection in the intracranial area. However, the use of fine needle aspiration has been contested. Alvarez et al26 noted that fine needle aspiration is not practical, and is not cost effective. Barrs and Kern27 reported 50% of 100 children who were evaluated in an emergency department after sustaining nasal trauma had a radiograph of the nose, but intranasal examination was performed in only 20 children. The value or yield of radiographs in these situations is doubtful. Fractures of the cartilage do

Table 3 Side of nasal septum affected by hematoma/abscess

<table>
<thead>
<tr>
<th>Sides</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>5</td>
</tr>
<tr>
<td>Left</td>
<td>2</td>
</tr>
<tr>
<td>Both</td>
<td>46</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
</tr>
</tbody>
</table>

Table 4 Presenting symptoms in nasal septal hematoma/abscess

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal obstruction</td>
<td>53</td>
<td>100</td>
</tr>
<tr>
<td>Mouth breathing</td>
<td>50</td>
<td>94.3</td>
</tr>
<tr>
<td>Nasal growth</td>
<td>51</td>
<td>96.2</td>
</tr>
<tr>
<td>Pain in the nose</td>
<td>27</td>
<td>50.9</td>
</tr>
<tr>
<td>Headache</td>
<td>3</td>
<td>5.7</td>
</tr>
</tbody>
</table>
of 46 patients developed a septal abscess, four (50%) had septal deformity. Chukuezi, in his series, noted that eight in 1992. In this study, 26.4% was classed as spontaneous with 65.2% attributed to trauma. It is not surprising as spontaneous occurrence of nasal septal abscess has been documented in both immunocompromised and immunocompetent patients.34-37

Males outnumbered females (M:F = 2.3:1) in this study; with Chukuezi8 and Ogisi32 all from the black population making similar observations; M:F = 8:1 and M:F = 4:1, respectively. Other literature suggests a strong male predominance in hematomas and abscesses of the nasal septum.6 While the reason for this observation is not yet settled, it has been proposed that males are more commonly engaged in aggressive activities, violence, and road traffic accidents than females, which puts them at greater risk for development of nasal septal hematoma/abscess with a male to female ratio ranging from 2:1 to 8:1.3,6,8,19,20,25,32

The outcome of this study was strikingly favorable, with no recurrence. This was attributed to diligent packing of the nasal cavity with insertion of a drain that was left in place for a reasonable period of time to avoid re-accumulation of hematoma or abscess. Early presentation, prompt diagnosis, and treatment cannot be overemphasized as key factors for successful outcome. The insertion of drain and retention for a certain period have been shown as a very important factor in complete resolution of abscesses.38

Conclusion

Nasal septal hematoma/abscess is more commonly encountered in children than in adults. Trauma is the most frequent etiology and males are more affected than females. Early presentation, prompt diagnosis, and treatment provide a desired result. Incision and drainage, and intranasal packing, with insertion of drain, is an effective treatment modality.
A high index of suspicion, and vigilant examination of patients presenting with facial trauma or nasal obstruction would lead to early detection of septal hematoma/abscess and consequent prevention of functional, aesthetic, and life-threatening intracranial complications.

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**Disclosure**

The authors declare no conflict of interest, personal or institutional in this study.

**References**


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