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Evaluation of the management of nasal septal haematoma and abscess: a systematic review

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Abstract

Objective. There is limited evidence on the optimal management of nasal septal haematoma and abscess. This systemic review aims to summarise the management and outcomes and identify gaps in the literature.

Method. A systematic search of Embase, PubMed, Cochrane Central Register of Controlled Trials (CENTRAL) and CINAHL was done. We included all studies on management of paediatric and adult patients with nasal septal haematoma or nasal septal abscess.

Results. Seventeen articles were included (15 retrospective and 2 prospective) totalling 503 patients. Prophylactic antibiotics generally are used in nasal septal haematoma. Most septal collections were drained under general anaesthetic, and incision and drainage used in all. Quilting sutures, drains, nasal packing or a combination of these surgical techniques were described. Re-collection occurred in 18 of the 503 (3.6 per cent) patients.

Conclusion. Low rates of re-collection following incision and drainage are reported. There is a lack of well-designed studies that stratify outcomes and morbidity of nasal septal abscess and nasal septal haematoma based on mode of treatment.

Review Article

Ovie Edafe takes responsibility for the integrity of the content of the paper.

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Introduction

Nasal septal haematomas and nasal septal abscesses are rare and are defined as collections of blood or pus under the mucoperichondrium and/or periosteum of the nasal septum.[1] The main aetiology for nasal septal haematoma is trauma, whilst the majority of nasal septal abscesses are thought to arise from infected nasal septal haematomas.[2] Other rare causes of nasal septal abscess include infections from the paranasal sinuses, oral cavity or orbits.[3–5] Spontaneous nasal septal abscesses have also been reported.[6] The rate of nasal septal haematoma and nasal septal abscess was reported to be 0.9 per cent in a large case series of 2500 nasal trauma cases in children.[7] Main symptoms include nasal obstruction, pain and discharge; clinical examination may reveal a unilateral or bilateral septal swelling.[8,9]

Management of a nasal septal collection requires prompt diagnosis and adequate surgical drainage, often in conjunction with antibiotics.[10,11] Complications can arise due to delayed or inadequate treatment leading to severe functional and cosmetic sequelae, septal perforation, nasal bridge (saddle nosed) deformity or spread of the infection to the orbit or intracranially.[9,10,12–15]

Nasal septal haematomas and nasal septal abscesses are rare and are considered in patients presenting with acute nasal blockage and septal swelling, particularly in cases of nasal trauma. Other symptoms include fever, facial pain and rhinorrhoea.[16] Early diagnosis and prompt drainage is imperative to minimise the risk of local and distant complications.[8,15] Significant delays in presentation can have potentially life-threatening complications including intra-cranial infection[12] due to the retrograde venous drainage of the nose.[17]

Surgical techniques include needle aspiration, incision and drainage with or without nasal packing, surgical drains and quilting sutures.[1,8–15,18–20] There is a paucity of evidence regarding the optimal management of nasal septal haematomas and nasal septal abscesses, reflected by the absence of established treatment guidelines. Given the rarity of nasal septal haematomas or nasal septal abscesses, the evidence base is largely limited to case reports and small series. There is scope to summate data from individual studies to further characterise this condition, management strategies and treatment outcome. The aim of this review is to report the different types of treatment and reported outcomes within the literature in order identify a stronger evidence base for managing nasal septal haematomas and nasal septal abscesses.

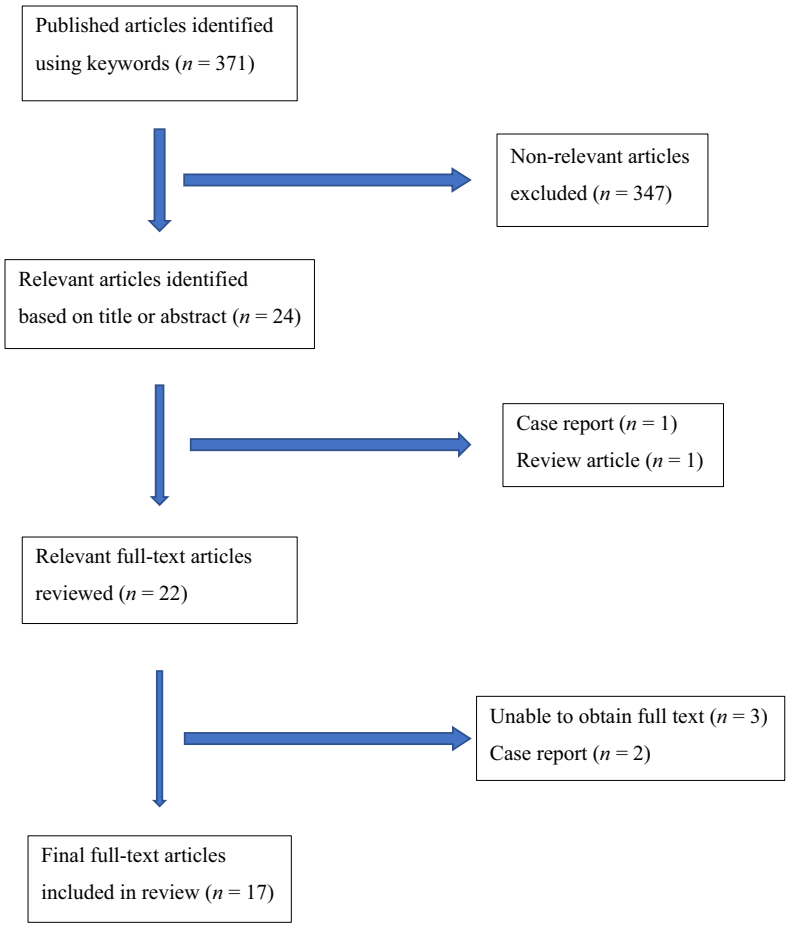

Figure 1. Preferred Reporting Items for Systematic Review and Meta-Analyses 'PRISMA' flow diagram showing the selection process.

Methods

The systematic review was reported as per the Preferred Reporting Items for Systematic Review and Meta-Analyses 'PRISMA' guidelines (see Figure 1).

Eligibility criteria

All original studies reporting outcomes on patients (paediatric and adult) treated for nasal septal haematoma or nasal septal abscess. Articles not available in the English language and review articles were excluded alongside case reports (due to a high risk of bias).

Information sources

A systematic review of the databases Embase, PubMed, Cochrane Central Register of Controlled Trials (CENTRAL) and CINAHL from inception up to 31 July 2023 was performed. The search terms (septal abscess) OR (septal haematoma) OR (septal hematoma) OR (septal collection) OR (septal seroma) were used across all search fields.

Study records and data items

Titles and abstracts from the initial search were independently screened by two authors (RJ and WJ). Full text for articles identified as potentially relevant was reviewed to assess for eligibility. Data were extracted by both authors to check for accuracy and collated using a standardised data-collection proforma. The reference sections of all original articles were hand-searched to identify other potentially relevant articles. The process undertaken is presented in Figure 1. Data were collected on the following variables: study details, patient demographics, aetiology of haematoma/abscess, antibiotic use, management information (anaesthetic, intervention, use of packing/drains/quilting sutures), complications and outcomes.

Risk of bias

A modified Murad tool was used to assess quality of all studies included in the review.[21] The maximum quality score a study could have was 5 as per our modified Murad tool.

Data Synthesis

Quantitative synthesis of data from individual studies was performed if there was similarity in study methods and outcome assessment. Otherwise, we did a formal narrative synthesis on outcomes of individual studies and discussed relationship between study methods and outcomes.

Results

General demographics

Seventeen studies (see Table 1) were included in this review: two prospective observational cohort studies[1,12] and 15 retrospective observational cohort studies.[8–11,13–15,18–20] Management of nasal

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Table 1. Study characteristics, method of drainage and outcomes

(Study number in references) metadata	Pathology (*n*)	Method of drainage	Use of a drain	Nasal packing	Outcome
(23) Vietnam, Adult, Retro; $N = 36$	Abscess (36)	A; $N = 36$ I+D; $N = 36$	Povidone-impregnated gauze	Yes (Merocel packs, non-absorbable)	No re-collections or complications
(29) Taiwan, Adult, Retro; $N = 76$	Abscess (76)	I+D; $N = 76$	No	No	No septal perforations, none required septal surgery
(22) USA, Paediatric, Retro; $N = 13$	Haematoma (13)	I+D; $N = 13$	Yes (Penrose in 3)	Nasal splints in 5	2 re-collections, 7 developed septal abscess. Follow up: 3 saddle nose deformities, 1 septal deviation, 1 nasal deformity
(25) Poland, Paediatric, Retro; $N = 20$	Haematoma (11) Abscess (9)	I+D; $N = 20$	No	No	1 re-collection (patient had MRSA). Follow-up 5 had reconstructive septal surgery
(10) Turkey, Adult/Paediatric, Retro; $N = 68$	Haematoma (23) Abscess (45)	A: $N = 68$ I+D: $N = 68$	Yes (Penrose)	Yes (nasal splints)	2 re-collections. 20 minor and 9 major sequelae at follow up
(11) Nigeria, Adult/Paediatric, Retro; $N = 24$	Haematoma (15) Abscess (9)	I+D: $N = 24$	No	No	No re-collections. Nasal deformity (3), facial-orbital cellulitis (1), intracranial complication (1)
(24) Taiwan, Adult, Retro; $N = 6$	Abscess (6)	I+D; $N = 6$	Yes (Penrose)	Yes (unclear type)	No re-collections. 2 developed saddle nose deformity
(13), Pakistan, Adult/Paediatric, Retro; $N = 19$	Haematoma & Abscess	I+D: $N = 19$	No	No	No re-collections. All cases of sepal abscess developed saddle nose (number unclear)
(1) Nigeria, Adult/Paediatric, Pro; $N = 53$	Haematoma (49) Abscess (4)	A: $N = 53$ I+D: $N = 53$	Yes (Penrose)	Yes (non-absorbable)	No re-collections or complications
(18) Italy, Paediatric, Retro; $N = 7$	Abscess (7)	I+D: $N = 7$	No	Yes (non-absorbable)	No re-collections or complications
(14) Brazil, Adult/Paediatric, Retro; $N = 30$	Haematoma (1)Abscess (29)	I+D: $N = 30$	Yes (Penrose – 25)	Yes	7 re-collections. 8 other complications identified.
(19) Mexico, Paediatric, Retro; $N = 16$	Haematoma (7) Abscess (9)	I+D: $N = 16$	Yes (Penrose)	Yes	No re-collections. 10 minor complications and 6 major complications.
(8) Australia, Paediatric, Retro, $N = 20$	Haematoma (8) Abscess (12)	I+D: $N = 20$	Yes (Penrose – 4)	Yes	3 re-collections (all septal abscess). Septal abscess had high rates of cartilage necrosis. 5 needed future corrective nasal surgery.
(9) Malaysia, Adult/Paediatric, Retro; $N = 14$	Abscess (14)	I+D: $N = 14$	No	No	No re-collections. 2 cases saddle nose deformity secondary to septal perforation
(12) Nigeria, Adult/Paediatric, Pro; $N = 46$	Haematoma (38) Abscess (8)	I+D; $N = 46$	Yes (drainage tube)	Yes (gauze)	No re-collections. 4 cases of nasal deformity or restricted nasal airway
(20) Denmark, Adult/Paediatric, Retro; $N = 39$	Haematoma (27) Abscess (12)	I+D; $N = 39$	No	Yes (type unclear)	1 re-collection. 8 had septal necrosis, 14 developed nasal obstruction requiring surgery in 6 patients
(15) USA, Adult/Paediatric, Retro; $N = 16$	Abscess (16)	I+D; $N = 16$	Yes (Penrose)	Yes (non-absorbable)	2 re-collections. 3 developed saddle nose deformity and 1 had deviated nasal septum

Retro = retrospective; Pro = prospective; A = aspiration; I+D = incision and drainage.

septal haematomas and nasal septal abscesses were reported in 10 studies, six studies reported only nasal septal abscess cases, whilst one study only reported a nasal septal haematoma case. Overall, the studies included 503 patients:192 patients (38.2 per cent) with nasal septal haematoma and 292 patients (58.1 per cent) with nasal septal abscess. In one study, the proportion of nasal septal

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haematomas and nasal septal abscesses was unclear accounting for the remaining 19 patients (3.8 per cent).

Twelve studies provided exact numbers of patients grouped as either paediatric (191 patients) or adult (97 patients). Four studies did not mention the distribution of paediatric and adult patients within their studies (totalling 215 patients). The commonest aetiology of nasal septal haematoma or nasal septal abscess occurred in 293 of 503 (58.3 per cent) patients. Other causes included idiopathic (58 of 503, 11.5 per cent), vestibulitis/furuncle (5 of 503, 1.0 per cent), sinus/upper respiratory tract infection (3 of 503, 0.6 per cent), iatrogenic (3 of 503, 0.6 per cent), diabetes (3 of 503, 0.6 per cent) and there was no mention of an aetiology for 138 of 503 (27.4 per cent) patients.

Use of antibiotics

Ten studies used antibiotics in all patients, including five studies treating nasal septal haematoma and nasal septal abscess patients, and five studies of nasal septal abscess cases only.[8–11,14,15] Three additional studies used antibiotics in selected cases most commonly in the presence of abscesses.[12,20,22] Ali *et al.*,[22] described the management of nasal septal haematoma patients, and identified 7 of 13 with an abscess at the time of drainage; these patients were given antibiotics, whilst those with haematomas alone were not.

Chukuezi *et al.*[12] used antibiotics based on culture and sensitivity results from evacuated septal material; however, it is unclear if or when empirical antibiotics were administered. In their series, four patients developed brain abscesses which the authors attributed to delays presenting to hospital and not through antibiotic use.[12]

Tavares *et al.*[14] recommended a first dose of intravenous (IV) antibiotic prior to incision and drainage in a series of nasal septal haematoma ($n = 1$) and nasal septal abscesses ($n = 29$) with Cefalotine (8 g), a first-generation cephalosporin antibiotic, prescribed most frequently and continued 3–5 days post-drainage followed by oral antibiotics for 7–10 days. Sayin *et al.*[10] gave IV ampicillin–sulbactam (± metronidazole in cases of nasal septal abscess), followed by oral antibiotics on discharge totalling 10 days for nasal septal haematoma and 14 days for nasal septal abscess. Both Canty *et al.*[8] and Ambrus *et al.*[15] used a variety of antibiotic combinations. Canty *et al.*[8] often favoured IV floxacillin (± additional oral or intravenous antibiotic) or oral amoxicillin in patients with nasal septal haematoma and nasal septal abscess. Ambrus *et al.*[15] commonly used intravenous oxacillin or ampicillin, whilst being the only study to use intramuscular antibiotics (intramuscular benzathine) in patients with nasal septal abscess. Studies by Ngo *et al.*,[23] Chen *et al.*[24] and Wasilewska *et al.*[25] used broad-spectrum empirical antibiotics such as co-amoxiclav, second-generation cephalosporins, metronidazole or clindamycin with culture and sensitivity determining final antibiotic choice in patients with nasal septal abscess[23,24] or nasal septal haematoma and nasal septal abscess.[25]

In the five studies that administered antibiotics in all cases of nasal septal haematoma, none reported progression to nasal septal abscess, supporting the potential for antibiotics being protective against the development of nasal septal abscess.[8,10,11,14,25] In the Kryger *et al.* study,[20] one patient initially presenting with nasal septal haematoma progressed to nasal septal abscess. This was drained and treated with antibiotics, however, it is unclear whether this patient had started antibiotics on initial presentation prior to progression to nasal septal abscess.[20] No study evaluated routine antibiotics in nasal septal haematomas to prevent abscess formation, however, one study reported a single case of nasal septal haematoma which developed into nasal septal abscess when initial antibiotics were not given.[20]

Treatment and use of anaesthetic

All 17 studies used incision and drainage as the definitive treatment for nasal septal haematoma or nasal septal abscess ($n = 503$). No studies reported aspiration of the septal collection as a definitive surgical intervention. Three studies performed pre-operative needle aspiration to confirm the diagnosis prior to incision and drainage.[1,10,23]

Incision and drainage were performed under general anaesthetic (GA) in (241 of 503 patients, 47.9 per cent) and under local anaesthetic (LA) in (65 of 503 patients, 12.9 per cent). In six studies totalling 197 of 503 (39.2 per cent) patients, the type of anaesthetic was not clearly stated. Ahmed *et al.*[13] and Ngo *et al.*[23] both performed drainage almost exclusively under LA in a population of adults. Several authors specifically recommended drainage under GA within the paediatric population.[8,14] The only study to use sedation was by Jalaludin *et al.*[9] who used pethidine and promethazine (Phenergan) injections, however, the proportion and age of patients given sedation was not stated.

Method of drainage, use of drains, sutures and packs

Several studies outlined the type of incision made, including hemi-transfixion,[10] J-shaped incision,[11] extended modified Killian incision,[23] inferior incision[24] or a vertical incision over area of maximum fluctuance and washout.[1] Tavares *et al.*[14] recommend using bilateral mucosal incisions in the presence of bilateral septal swellings, however, they did not report any further details of their drainage technique. The remaining studies did not describe the operative techniques for surgical drainage in detail. For studies including both nasal septal haematoma and nasal septal abscess patients, no study described a different surgical drainage technique utilised based on the type of collection found intra-operatively.

A surgical drain was used in 10 studies,[1,8,10,12,14,15,19,22–24] with eight using a Penrose drain which was removed 2–3 days post-drainage. An established pattern for using a drain was not identified with its use for both nasal septal haematoma and nasal septal abscess. In Canty *et al.*,[8] a Penrose drain was used in only 4 of 20 patients, without explanation for its use in selected cases. Two of these cases (50 per cent) were re-collected with the author concluding that a drain was not beneficial.[8] Ali *et al.*[22] identified two re-collections in patients that had Penrose drains and splints placed following drainage. Both were re-drained with a Penrose drain and splints being used again.[22] Other studies using Penrose drains in 53[1] and 16[19] patients, respectively, reported no re-collections, whilst Sayin *et al.*[10] had two re-collections amongst 68 patients (2.9 per cent). Chukuezi *et al.*[12] described using a drainage tube which was removed 3–4 days post-drainage, but no further details on the specific type of tube and the authors reported no re-collections.

The types of nasal packing used following surgical drainage include Merocel packs,[18,23] simple gauze,[12] finger cots,[15] internal nasal splints,[10,22] antibiotic laden gauze with or without Vaseline[1,11] and povidone-impregnated gauze.[23] No studies used absorbable nasal packing, and the packing material was removed 2–7 days after insertion. Several studies used nasal packing, but failed to state the type.[8,19,20,24] Nasal packing was commonly used alongside a septal drain.[8,10,12,15,22–24] All 10 studies that placed a drain concurrently used nasal splints or packing. Two studies used intranasal packing without a drain.[18,20]

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Septal quilting sutures were described in two studies.[10,13] Ahmed *et al.*[13] detailed their technique of a continuous quilting suture using absorbable 3.0 dyed vicryl without nasal packing and highlighted the importance of keeping at least a 1-cm gap between suture points to avoid iatrogenic septal perforation. Sayin *et al.*[10] used absorbable suture material to quilt the septum alongside nasal splints, although the suture material was not mentioned.

Re-collection, complications, follow up

Across all studies 18 of 503 (3.6 per cent) septal collections required repeat drainage (4 haematomas, 6 abscesses, 8 haematoma or abscess). The highest rate of re-collection occurred in the Tavares *et al.*[14] study involving 7 of 30 (23.3 per cent) cases. Of note 13 of 30 (43.3 per cent) drainages were performed in the emergency room (and assumed to be under LA); of these, 93.4 per cent of patients in their cohort had a septal abscess drained at the time.[14] On the other hand, Ambrus *et al.*[15] described the success of LA drainage which was used in 10 patients without any re-collection or complications.

Complications from septal collections included palatal abscess,[14] intranasal synechiae,[14] facial and orbital cellulitis,[11,14] septal perforation,[9,14] saddle nose deformity[9,13–15,24] and nasal deformity[9,12,15,25] Other studies divided complications into minor and major sequalae.[10,19] Significant intracranial complications were rare (six cases).[11,12,14] Two studies reported individual cases of frontal empyema.[11,14] Chukezi *et al.*[12] reported four cases of brain abscess secondary to nasal septal abscess (including one case of cavernous sinus thrombosis) resulting in three deaths. Importantly these patients had significantly delayed presentations to hospital, ranging from 3 to 4 weeks from the onset of symptoms.[12]

Other studies reported similar complication rates between patients with nasal septal haematoma and nasal septal abscess.[10] Canty *et al.*[8] reported a higher rate of cartilage necrosis in patients with nasal septal abscess, whilst Ahmed *et al.*[13] reported saddle nose deformity in all nasal septal abscess cases, albeit the number of which is not clear. Most studies reporting patients with nasal septal haematoma and nasal septal abscess described collective complications across both cohorts making it challenging to ascertain the effect that the type of septal collection had on the subsequent complication.[10,12,14,19,20]

Several authors reported reducing nasal fractures (when present) at the time of septal drainage.[10,18–20] Removal of necrotic cartilage and re-implantation at the time of drainage was also described.[10,18] Sayin *et al.*[10] excised necrotic areas of cartilage and re-implanted residual septal cartilage to the defective area with 61.7 per cent of patients developing minor or major sequelae, although rates of septal perforation were not reported. Dispenza *et al.*[18] described two techniques to repair areas of necrotic cartilage, the first using homologous cartilage obtained from a cartilage bank (used in three cases), whilst the second, called the mosaic technique, utilised multiple small fragments of residual septal cartilage fixed with fibrin glue (used in four cases). Overall, no septal perforations were reported,[18] therefore immediate repair of necrotic septal cartilage may have a role in preventing septal perforation.

The length of follow up varied between studies. Ali *et al.*[22] had a short median follow up of one month but reported that seven patients developed long-term sequelae. Dispenza *et al.*[18] reported long-term results at 5- and 10-year follow-up periods; they reported normal development of the face and nasal pyramid in their cohort of seven paediatric patients treated for traumatic septal abscesses.

Across the 17 articles the median quality score (interquartile range) was 1.5 (0–4), indicating the studies were generally of low quality (Table 2)

Discussion

This review sought to characterise management strategies of nasal septal haematomas and nasal septal abscesses, and their influence on outcomes. Several studies stress the importance of early diagnosis and drainage of nasal septal haematomas and nasal septal abscesses to avoid complications and long-term sequalae.[12,20] Nasal septal abscesses often present later than nasal septal haematomas.[12,20] Delays in surgical intervention may lead to progression from nasal septal haematoma to nasal septal abscess, as highlighted by Canty *et al.*,[8] who reported five cases of missed nasal septal collection later re-presenting with nasal septal abscess in 4 of 5 patients. Prompt diagnosis, early surgical drainage and administration of broad-spectrum antibiotics in nasal septal abscesses are essential to avoid significant intracranial complications that can lead to death.[12]

Within the literature, antibiotics were commonly reported to have been used in nasal septal abscesses and nasal septal haematomas.[8–12,14,20] These were often commenced empirically using broad-spectrum antibiotics to cover commonly associated organisms including *Streptococcus* species, *Haemophilus influenza* and *Staphylococcus aureus*[18,26] and adjusted based on culture and sensitivity results.[11] Samples sent to microbiology were obtained by pre-drainage aspiration to confirm the diagnosis of septal collection or were obtained intra-operatively.[23,24]The current literature does not identify any significant evidence as to whether antibiotics are protective in preventing nasal septal haematomas progressing to nasal septal abscesses. Sogebi *et al.*[11] identified risk factors significantly associated with complications from nasal septal collections. These included age $>$ 45 years, presence of a co-morbidity, longer duration before presentation, presence of an abscess, and a culture-positive aspirate.[11] Therefore, nasal septal abscesses should be aggressively treated through early surgical drainage and antibiotics to minimise potential complications.

Due to the heterogeneity of data, it is unclear whether GA is superior to LA drainage. Rates of re-collection and complications related to the anaesthetic technique are confounded by other variables such as presence of abscess and drainage technique. Incision and drainage under GA within sterile theatre conditions was generally favoured,[1,8,10,19,20] although LA drainage in the emergency room or theatre has also been successfully utilised.[13,15] Factors such as patient age affected the method of anaesthesia with GA favoured in paediatric cases.[8,14] Series that describe LA drainage originated from Vietnam,[23] Malaysia,[9] Pakistan,[13] Nigeria,[12] Brazil[14] and USA.[15] The choice of LA drainage may be influenced by accessibility of healthcare resources such as theatres, general anaesthesia or even the higher costs incurred by patients for GA drainage. Although a direct quantitative comparison between GA and LA was not done, we recommend GA drainage where possible as this is better tolerated by patients and allows comprehensive drainage and washout.

Quilting nasal sutures, nasal drains and nasal packing/splints on their own or in conjunction with one another have been described in the literature to reduce nasal re-collections. Of seven studies that reported cases of re-collection, six used either a Penrose drain or nasal packing alone or a Penrose drain in conjunction with nasal packing.[8,10,14,15,20,22] Sayin *et al.*[10] used a Penrose

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Table 2. Modified Murad tool – quality assessment applied to studies within literature review

Study number in references	1. Selection	2. Ascertainment: Exposure	3. Ascertainment: Outcome	4. Causality	5. Reporting	Total
23	0	1	0	1	1	3
29	0	1	0	0	0	1
22	1	0	0	1	0	2
25	0	0	0	0	0	0
10	0	1	0	1	1	3
11	0	1	0	1	1	3
24	0	1	0	1	1	3
13	1	1	0	0	1	3
1	1	1	0	1	1	4
18	0	0	0	1	0	0
14	0	0	0	0	0	0
19	0	0	0	1	0	1
8	1	0	0	0	1	2
9	0	0	0	0	0	0
12	0	0	0	1	1	3
20	0	0	0	1	0	1
15	0	0	0	0	0	0

drain, nasal splints and septal suturing but still reported two cases of re-collection. Penrose drains work by allowing free drainage through an open wound.[27] However, this may be counterproductive to reducing anatomical dead space between the septal mucosa or mucoperichondrium and underlying septal cartilage to stop re-collections. Quilting sutures of the nasal septum are commonly used in septoplasty surgery to prevent post-operative haematoma and bleeding.[28] Ahmed *et al.*[13] advocated continuous quilting sutures without additional nasal packing, with no cases of re-collection (a recommendation echoed by Canty *et al.*).[8] Septal quilting sutures appear to be effective at reducing anatomical dead space around the septum and consequently the chance of re-collection.

Rates of re-collection following drainage of abscesses are generally low (3.6 per cent across the literature). Tavares *et al.*[14] reported a particularly high rate of re-collection (43.3 per cent) with their cohort that consisted almost exclusively of nasal septal abscess cases. Canty *et al.*[8] also noted re-collections particularly in patients with nasal septal abscess. Furthermore, in the Tavares *et al.*[14] series half of drainages were performed in the emergency room raising potential contributing factors including environmental sterility, equipment availability and the use of local anaesthesia. Particularly in cases of nasal septal abscess, which may have a higher tendency for re-collection, it would be prudent to take all steps to ensure an optimal drainage (i.e. within a sterile theatre environment, with good lighting and under GA).

This is the first review of its kind known to us to report the existing literature on the management and outcomes of nasal septal haematomas and nasal septal abscesses. Most studies were retrospective in nature and were limited by incomplete data sets and small sample sizes. Several studies reported outcomes of nasal septal haematoma and nasal septal abscess patients as a single cohort,[1,8,10–12,20] which restricted the assessment of outcomes for these two different entities and did not allow for direct comparison. There remains a paucity of evidence within the literature regarding aspects of managing septal collections. The following issues remain: (1) whether antibiotic use in nasal septal haematomas is protective against the formation of nasal septal abscesses; (2) the optimum antibiotic strategy for nasal septal haematoma and/or nasal septal abscess (including use of IV antibiotics, prophylactic antibiotics in the absence of abscess and length of course of antibiotic); (3) whether GA or LA drainage are equally effective; and (4) optimum post-drainage techniques that minimise re-collection which may include quilting suture, drains and packing.

In an era of increasing collaborative research a multicentre prospective study assessing the techniques and outcomes of patients treated for nasal septal haematoma and nasal septal abscess would form large data sets reflecting the current practices and effects on outcomes. This approach with respect to the management of nasal septal haematomas and nasal septal abscesses may help to shed light on areas of equipoise and potentially inform recommendations for the ideal management of these conditions.

- Standard management for nasal septal haematomas and nasal septal abscesses involves the use of incision and drainage under general anaesthetic with low rates of re-collection
- Described surgical techniques includes the use of quilting sutures, drains and non-absorbable nasal packing
- Broad spectrum antibiotics are used in the management of nasal septal abscesses and some patients with nasal septal haematomas are given prophylactic antibiotics to prevent infection and abscess formation
- Evidence-based management for nasal septal abscesses and nasal septal haematomas is weak
- Few studies stratify outcomes, short- and long-term morbidity in patients with nasal septal abscesses and haematomas based on specific treatment modalities to identify optimal management strategies

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Conclusion

Nasal septal haematomas and nasal septal abscesses are rare, but delays and inadequate treatment can lead to significant local and distant complications. Early drainage is recommended to reduce both early and late sequalae. There remains a lack of high-quality evidence regarding optimum management. Future prospective multicentre studies would help to strengthen the evidence base for managing nasal septal collections.

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