

Cutaneous Cysts of the Head and Neck

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Purpose: A retrospective study on the features of cutaneous cysts of the head and neck as seen in a North Jordanian population.

Patients and Methods: The records of the Department of Pathology at Jordan University of Science and Technology were reviewed for patients with cutaneous cysts of the head and neck during the 12-year period extending between 1991 and 2002. Applicable records were retrieved, reviewed, and analyzed. Primary analysis outcome measures included patient age, gender, location of the cyst, type, clinical presentation, and treatment. The records of 488 patients were available for analysis.

Results: Epidermoid cyst was the most frequent lesion (49%) followed by pilar cysts (27%), and dermoid cysts (22%). The site affected most frequently was the scalp (34%), predominantly with pilar cysts (96%). Epidermoid cyst was the most frequent lesion in the neck (68%), cheeks (77%), periauricular area (70%), and the nasal area (55%). Dermoid cyst was the most frequent lesion in the periorbital area (52%). Females represented 51% of the patients and males accounted for 49%. The peak of age distribution for patients with dermoid cysts was at the first decade, and both of epidermoid and pilar cysts peaked at the third decade. Infection presented in 2.5% of cases. All cysts were enucleated surgically.

Conclusion: Maxillofacial surgeons often encounter cutaneous cysts of the head and neck, and they must be familiar with the clinicopathologic characteristics of these lesions.

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Cutaneous cysts are frequently benign head and neck lesions. The most common cutaneous cysts are retention cysts from skin appendages, with developmental or embryonic cysts presenting much less routinely.¹ Cysts of skin appendages are labeled as sebaceous cysts commonly. The sebaceous cyst is preferably described as either an epidermal cyst or trichilemmal (pilar) cyst.² Sweat gland elements may also produce cysts classified as hidrocystomas.¹

Dermoid and epidermoid cysts are developmental cysts that occur in the head and neck with an inci-

dence ranging from 1.6% to 6.9%.³ They represent less than 0.01% of all cysts of the oral cavity.⁴ An epidermal cyst is derived from epidermis, and is formed by cystic enclosure of epithelium within the dermis that becomes filled with keratin and lipid-rich debris.⁵ It occurs in young to middle-age adults. It is usually solitary and connects with the surface by keratin-filled pores. Dermoid cysts lack any entry port and have a predilection for lines of embryonic fusion.⁶ Younger patients predominate for dermoid cyst presentation. Histologically, pilosebaceous structures may be noted within the wall of a dermoid cyst.⁵

According to Fitzpatrick,⁵ a pilar cyst is seen most often on the scalp in middle-age females. It occurs frequently as multiple smooth, firm, dome-shaped nodules that are not connected to the epidermis. The usually thick cyst wall is composed of stratified squamous epithelium with a palisaded outer layer resembling that of the outer root sheath of hair follicles, and an inner corrugated layer. The cyst contains very dense keratin; it is often calcified, with cholesterol clefts. If the cyst ruptures, it may be inflamed and very painful.

Cutaneous cysts are diagnosed and treated by maxillofacial surgeons around the world on an almost regular basis. Nevertheless, there is a notable paucity of comprehensive studies in the literature on the various lesions encountered in clinical practice. This

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study focuses on some of the features of cutaneous cysts of the head and neck as seen in a North Jordanian population.

Patients and Methods

Data included in this retrospective study were collected from the records of the Department of Pathology at Jordan University of Science and Technology. The Department of Pathology receives all biopsy specimens from all hospitals in the northern part of Jordan, serving approximately 30% of the Jordanian population living in 4 different governorates. The records of patients with cutaneous cysts of the head and neck received during the 12-year period extending between 1991 and 2002, were retrieved, reviewed, and analyzed. The main analysis outcome measures were patient age, gender, and cyst location, type, clinical presentation, and treatment. The records of 488 patients were available for analysis.

Results

TYPE AND SITE

Epidermoid cyst was the most frequent lesion (49%) followed by pilar cysts (27%) and dermoid cysts (22%), in a descending order. Other cyst types comprised 2% of cases (Table 1). These consisted of hydrocystoma (5 cases) and hydatid cyst (3 cases). As shown in Table 1, the head and neck sites affected most frequently with cutaneous cysts were the scalp (34%) followed by the neck (18%), periorbital area (17%), cheeks (including lips; 16%), auricular area (9%), and nasal area (including forehead; 6%).

The predominant cyst type in the scalp was the pilar cysts (96%); the distribution of other scalp cysts is shown in Table 1. The neck exhibited epidermoid cysts (68%) mostly; other cyst types were dermoid, pilar, lymphoepithelial, and a single hydrocystoma (Table 1). The periorbital area presented dermoid cysts (52%), epidermoid cyst (42%), and hydrocystomas, in a descending order (Table 1). The cheek (including lips) was involved predominately by epidermoid cyst (77%); dermoid and pilar cysts were of

Table 1. TYPE AND SITE DISTRIBUTION OF CUTANEOUS CYSTS OF THE HEAD AND NECK (N = 488)

Site	Cyst Type (%)					Total	% Total
	Epidermoid	Pilar	Dermoid	Hydrocystoma	Hydatid		
Periauricular							
Preauricular	4	2			0	6	1
Auricle	14		2			16	3
Postauricular	13		9			22	5
Total	31 (70)	2 (5)	11 (25)	0	0	44 (100)	9
Cheek	61 (77)	9 (11)	9 (11)			79	16
Neck							
Submandibular	4	1	3			8	2
Lateral (ONS)	4	1	1			6	1
Sublingual	4		4			8	2
Submental	2		5			7	1
Midline (ONS)	6					6	1
Not specified	39	1	8	1	3	52	11
Total	59 (68)	3 (3)	21 (24)	1 (1)	3 (3)	87 (100)	18
Nasal complex	17 (55)	4 (13)	9 (29)	1 (3)		31 (100)	6
Periorbital							
Eyebrow	7		15			22	5
Eyelid	16	1	17			34	7
Canthus	8	2	2			12	2
Supraorbital	1	0	4	0		5	1
Not specified	3		5	2		10	2
Total	35 (42)	3 (4)	43 (52)	2 (2)	0	83 (100)	17
Scalp							
Occipital	1	4				5	1
Temporal	1		3			4	1
Not specified	32	109	13	1		155	32
Total	34 (21)	113 (69)	16 (10)	1 (1)	0	164 (100)	34
Total	237 (49)	134 (27)	109 (22)	5 (1)	3 (1)	488 (100)	100

Abbreviation: ONS, otherwise not specified.

Table 2. AGE AND GENDER DISTRIBUTION OF CUTANEOUS CYSTS OF THE HEAD AND NECK (N = 488)

Cyst Type	Number (%)	Age (Yr)		Gender (%)	
		Range	Mean	Female	Male
Epidermoid	237 (49)	0.25-80	28.3	100 (42)	137 (58)
Pilar	134 (27)	1.5-80	37.9	92 (69)	42 (31)
Dermoid	109 (22)	0.25-65	17.9	49 (45)	60 (55)
Hidrocystoma	5 (1)	39-60	49.4	3 (60)	2 (40)
Hydatid	3 (1)	39-70	30.1	3 (100)	0
Total	488 (100)			247 (51)	241 (49)

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equal frequency (11%). The periauricular area exhibited mostly epidermoid cysts (70%), but dermoid and pilar cysts were also present (Table 1). The nasal area (including forehead) mostly presented with epidermoid cysts (55%), dermoid cysts (29%), and pilar cysts (13%).

AGE AND GENDER

Among the 488 patients with cutaneous cysts of the head and neck an almost equal distribution between males and females was found, with females representing 51% of the patients and males 49% (Table 2). The average age at the time of surgical excision was 29.14 years. As depicted in Figure 1, the peak age distribution for patients with dermoid cysts was at the first decade, with a sharp drop afterward. On the other hand, both epidermoid and pilar cysts peaked at the third decade with a steady decline afterward. Age and gender distribution of individual cyst types is shown in Table 2.

CLINICAL PRESENTATION

The chief complaint in all cases was that of a mass lesion of varying duration. Pain was reported in 12 cases (2.5%). The majority of lesions were provision-

ally diagnosed as cysts; few cases (23; 4.7%) were misdiagnosed as other mass lesions. Multiple scalp pilar cysts were reported in 5 cases. Infection presented in 12 cases (2.5%; 8 epidermoid cysts, 3 dermal cysts, 1 pilar cyst).

Histopathologic findings were classical in all cyst types. Dystrophic calcification was observed in 12 pilar cysts, but the diagnosis of other trichilemmal lesions such as pilomatricoma was excluded. Giant cell reaction was reported in 48 cases (31 epidermoid, 10 pilar, 7 dermoid cysts). Two cases of epidermoid cysts showed extensive mural fibrosis.

TREATMENT

Small superficial epidermoid cysts were excised around the base. Deeper epidermal cysts were removed via an elliptical incision along the axis of a skin crease around the punctum of the cyst. This was followed by deep dissection around the cyst peripherally ending in complete cyst enucleation with the attached skin carrying the punctum. Other types of cysts, notably dermoid and pilar cysts were enucleated via a small incision in a resting skin tension line or hidden behind the hairline, followed by dissection around the cyst.

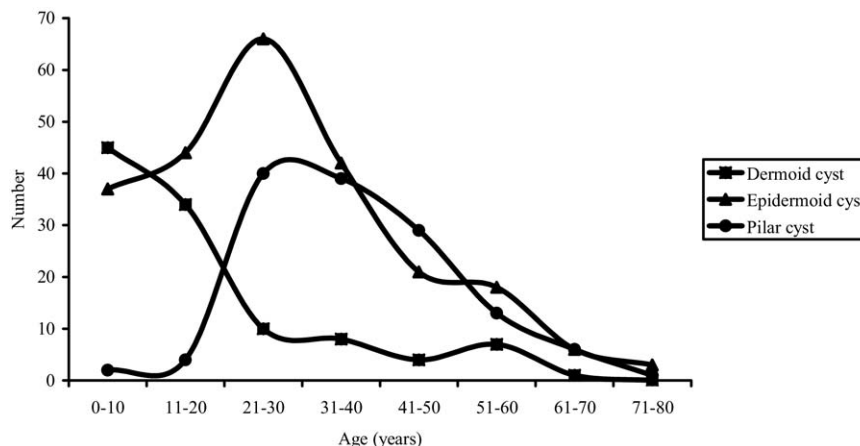


FIGURE 1. Age distribution of common cutaneous cysts of the head and neck in North Jordanians.

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Sublingual dermoid cysts were removed via a transverse submental incision and the anterior bellies of the digastric muscles separated. The deep fascia was entered to show the well-encapsulated cystic mass. The entire cyst was removed with blunt dissection.

Discussion

The head and neck sites affected most frequently with cutaneous cysts were the scalp (34%), neck (18%), periorbital area (17%), cheeks (including lips; 16%), periauricular area (9%), and nasal area (including forehead; 6%). This differs from findings of a previous series² that showed that the cheeks (including upper lips) were the most common location for cysts, accounting for 36% of the total. The difference is probably related to a referral bias because their patients were referred for a facial lesion clinic. Our results were obtained from the record of a regional pathology facility receiving specimens from different specialties in different hospitals.

In our series, epidermoid cyst was the most frequent lesion (49%) followed by pilar cysts (27%) and dermoid cysts (22%), in a descending order. Golden and Zide⁵ found a similar pattern although their frequency of individual types of cutaneous cysts differs markedly from our findings. They found that 79% of their lesions were epidermoid cysts, 9% were pilar cysts, and only 3% were dermoid cysts. Epidermoid cysts may occur anywhere in the body. About 7% of them are found in the head and neck region and only 1.6% are located within the oral cavity.⁷ Malignant change, although extremely rare, have been reported in epidermoid cysts.⁸ Although it is stated commonly that epidermoid cysts are congenital in origin, trauma could be a major factor in their etiology.⁹ Our finding that epidermoid cysts were most frequent among patients in their third decade supports a reactive causation for these cysts.

Dermoid cysts are relatively rare lesions, with only 1% to 3.5% affecting the head and neck region.¹⁰ These cysts have been reported to involve a wide range of head and neck structures including the frontotemporal-lateral brow area,¹¹ midline nasal region,¹² the oral cavity,^{4,13,14} nasopharynx, and lateral neck.¹⁵ In our series, the most frequent location for dermoid cysts was the periorbital area followed by the neck, scalp, periauricular, nasal and cheek areas, in a descending order. A similar distribution was reported by a previous series.¹⁶ Dermoid cysts have been reported to have no obvious gender predilection.^{2,10,17} Our results showed only a very slight excess of these cysts among males. This agrees generally with previous findings.^{2,10,17}

It has been stated that although dermoid cysts are considered congenital lesions, that may present in a

wide age range.¹⁷ These cysts are postulated to arise from ectodermic elements entrapped during the midline fusion of the first and second branchial arches between the third and fourth weeks of intrauterine life.¹⁸ Alternatively, they may arise from the tuberculum impar of His which, with each mandibular arch, forms the floor of the mouth and the body of the tongue.¹⁹ Another theory suggests that midline dermoid (and epidermoid) cysts may be a variant of the thyroglossal duct cyst with ectodermal elements predominating.²⁰ Our results showed a relatively young mean age of patients with dermoid cysts (17 years). This finding supports a congenital origin of this lesion.

Dermoid cysts of the floor of the mouth are relatively rare. In our series they comprised 8.3% of all dermoid cysts of the head and neck. In a review of 541 cases of dermoid cysts (from the whole body) seen at Mayo Clinic, 6.5% were located in the floor of the mouth.¹⁷ Their low incidence is also confirmed by recent literature.^{21,22} Cystic lesions developing above the mylohyoid muscle have the potential to displace the tongue toward the palate and subsequently create difficulty with mastication, speech, and possibly breathing.²³ Cystic lesions developing below the mylohyoid often produce a submental or submandibular swelling. Regardless of the location of the cystic mass, surgical intervention is necessary eventually. Depending on the extent and location of the cyst, removal can be achieved through an extraoral or a transoral approach.

The predominant scalp cutaneous cyst was the pilar cysts; a similar finding was reported in a previous series 2. Our results contrast with those of others,²⁴ however, who found that dermoid cyst was the most common. A possible cause for this contrast is a selection bias because the lesions reported by Cummings et al²⁴ were referred for neurosurgical intervention. It is worth stressing the point that surgeons must be cautious about swellings of the scalp that clinically seem to be attached to the skull. These should be investigated by radiographs and preferably by computed tomography (CT) before surgical intervention because of the possibility of intracranial extension.²⁵

We found 3 (0.6%) cases of hydatid cysts of the head and neck. This disease is caused by the parasitic tapeworm, *Echinococcus*. These cysts present as slowly growing benign tumors.²⁶ The clinical course depends on the site of involvement, the size of the cyst, and the pressure caused by the enlarged cyst.²⁷ Although hydatid cysts of the liver and lung are not unusual, they are rare in the head and neck region. Few cases have been reported in the pterygopalatine fossa,²⁷ maxillary area,²⁸ parotid region,²⁹ infratemporal fossa,³⁰ and nasopharynx.³¹ Surgical removal of the hydatid cyst is the most effective treatment.²⁷ The

surgeon must be careful to remove the cyst, totally avoiding spilling its contents.³² Fatal anaphylaxis on spilling the contents of the cyst has been reported.²⁷ The surgical strategy varies widely between radical clearance followed by lavage and simple instillation of scolicide. Supplementary chemotherapy, such as mebendazole or albendazole, can also be used.

The periorbital area presented mostly with dermoid cysts. This agrees with the majority of published literature.^{16,33-35} Orbital dermoid cysts have been classified as either exophytic or endophytic, according to their site of attachment in relation to the orbital rims.³³ The exophytic cysts grow externally and are discovered in childhood, whereas the endophytic ones are discovered later in life when they produce bone damage, with or without invasion of the adjacent structures.

The nasal area (including forehead) mostly presented with epidermoid cysts. A similar finding was reported by Golden and Zide.² The next in frequency was dermoid cysts. Nasal dermoid cysts are rare lesions that present most frequently in young patients. Curative treatment is surgical. However, CT or magnetic resonance imaging (MRI) is advisable to delineate deep tissue involvement and to exclude a possible associated intracranial extension, before surgical excision. A 27.5% risk of intracranial extension has been reported, especially in men with a dermal sinus.³⁶

Among the 488 patients with cutaneous cysts of the head and neck, an almost equal distribution between males (49%) and females (51%) was found. Identical gender distribution was reported previously.² The average age at the time of surgical excision was 29.14 years. This is lower than the average age of 44.1 reported previously.²

We found infection to be present in 2.5% of cases. This is lower than the 7% reported by Abou-Rayyah et al³⁷ and the 30% reported by Westphal and Reil,³⁸ but close to the 4% reported by Pryor et al.¹⁶ In a study of dermoid cysts,³⁷ it has been found that although clinical signs of inflammation are relatively few, about two thirds of the excised cysts showed histopathologic evidence of chronic infection. It has been found that aerobic isolates from infected neck cyst were predominantly *Staphylococcus aureus* and *Streptococcus pyogenes*. Pigmented *Prevotella*, *Porphyromonas*, and *Peptostreptococcus* species, all part of the oral flora, were the predominant anaerobes.³⁹ Infected cutaneous cysts may be mistaken for odontogenic abscesses, infected atheromas, furuncles, superinfected tumors, and other inflammatory conditions.

All cysts in this series were removed by a form of surgical enucleation with or without the overlying skin. In a study comparing punch and elliptical inci-

sions for the treatment of epidermoid cyst,⁴⁰ it has been concluded that the punch incision produces a superior cosmetic result while keeping a low recurrence rate of cysts. It has been recommended that epidermoid cysts measuring 1 to 2 cm that are located on the face or in an area of cosmetic concern are best treated with punch incisions.⁴⁰ A minimal excision technique for epidermoid cyst removal has also been reported.⁴¹ This technique involves making a 2 to 3 mm incision, expressing the cyst contents through compression, and extracting the cyst wall through the incision.

The clinical diagnosis of cutaneous cysts is confirmed easily at surgery by the typical appearance of a cystic formation filled with a creamy fluid. It is frequent therefore, for "typical" lesions to escape histologic investigation after removal. This poor clinical practice must be abandoned as some more sinister lesions such as basal cell carcinoma and pilomatrix carcinoma can mimic cutaneous cysts.⁴² Remote possible diagnoses must always be kept in the mind of maxillofacial surgeons and should be included in the differential diagnosis of these lesions especially in cases with atypical clinical presentation. Maxillofacial surgeons often encounter cutaneous cysts of the head and neck, and they must be familiar with the clinicopathologic characteristics of these lesions.

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