A Review

Dermoid Cyst: Way to its Diagnostic Approach & Diagnosis

Ravnitya Pal Singh[1], Supreet Singh[2]

BDS, MDS[1]
Consultant
Dept of Oral Pathology & Microbiology
The Dental Hub
Jammu

MBBS, MD[2]
Dermatology, Venereology & Leprosy)
Department of Dermatology GMC
Udhumpur

Access This Article Online

Website:
www.healtalk.in

Quick Response Code:

DOI:
https://zenodo.org/record/8116186

INTRODUCTION

A dermoid cyst is a teratoma of a cystic nature that contains an array of developmentally mature, solid tissues. It frequently consists of skin, hair follicles, and sweat glands, while other commonly found components include clumps of long hair,pocketsof sebum, blood, fat, bone, nail, teeth, eyes, cartilage, and thyroid tissue.

As dermoid cysts grow slowly and contain mature tissue, this type of cystic teratoma is nearly always benign. In those rare cases wherein the dermoid cyst is malignant, a squamous cell carcinoma usually develops in adults, while infants and children are usually present with an endodermal sinus tumor.

A dermoid cyst is a benign cutaneous developmental anomaly that arises from the entrapment of ectodermal elements along the lines of embryonic closure. These benign tumors are lined by stratified squamous epithelium with mature skin appendages found on their wall and their lumens filled with keratin and hair. Dermoid cysts are considered to be congenital, but not all of them are diagnosed at birth. Only about 40% of dermoid cysts are diagnosed at birth, while about 60% of the dermoid cysts are diagnosed by five years of age. The dermoid cysts usually present within the first year of life grow slowly. Dermoid cysts occur most commonly on the head and neck, with 84% of these cysts occurring in this region.

Dermoid cysts have been classified as true dermoid cysts, epidermoid cysts and teratoid cysts. Several theories have been proposed to explain the development of dermoid cysts: they may result from entrapment of ectodermal tissue of the first and second brachial arches during fetal development; they could represent a variant form of the thyroglossal duct cyst; finally, previous surgical or accidental events could lead to traumatic implantation of epithelial cells into deeper tissues.

An epidermoid cyst is benign and rarely occurs in the oral cavity. When lesions occur in the floor of the mouth, one must think of other diagnoses including ranula, lymphatic malformation and heterotypic gastrointestinal cyst. When lesions occur in the tongue, a differential diagnosis of tumor of granular cells, schwanoma, lipoma and neurofibroma, should be considered. When lesions occur in the orbital region, the differential diagnosis of orbital cysts are lipodermoid teratoma, plexiform neurofibroma, encephalocoele, orbital cellulitis, and orbital pseudotumor deep dermoid. Thus besides clinical examination, other complementary tests are necessary to achieve a diagnosis and eliminate other diseases. Giant epidermoid cysts are common in females and are usually found on the

How to cite this article: Singh R.P et al.: Dermoid Cyst: Way to its Diagnostic Approach & Diagnosis, HTAJOCD 2023; May-June(5):26-28

scalp, in people working outdoors and who have had significant sunlight exposure. On the scalp, it occurs in an area located in a line drawn along the hairline passing through the upper border of the ear lobule and joining these two lines at the occipital area. This is a retention type of cyst and is usually unilocular and contains keratin. Size varies from a few millimetres to a few centimetres but when the size exceeds 5 cm, it is referred to as a giant sebaceous cyst.

Diagnostic Approach

Dermoid cysts have the potential to grow over time and extend intracranially or intraspinally. Due to this potential, one should consider radiological studies before biopsy or manipulation, especially of a lesion that is midline or on the scalp. Aspiration or biopsies of dermoid cysts have the potential to cause infection, further leading to osteomyelitis, meningitis, or cerebral abscess.

Other possible complications include bony erosions, eyelid displacement, and intracranial extension.

Midline dermoid cysts have the highest association with cranial or spinal dysraphism or have an intracranial extension. Nasal dermoid cysts are the most frequent midline congenital nasal malformations. Studies have shown that there is a 10-45% incidence of intracranial extension in patients with a nasal dermoid cyst.

When undergoing neuroimaging, MRI is the preferred means of revealing evidence of intracranial or intraspinal extension. Studies showed a higher association between a dermoid cyst located in the frontal and pterional regions and bony erosion. If bony erosion is suspected, CT imaging is better at delineating these bony changes. In some instances, high-resolution ultrasonography may help reveal a deep component.

Dermoid cysts under an ultrasound will show a well-defined homogenous and hypoechoic cystic lesion. Fistulography was done preoperatively in some cases to rule out the involvement of a deep tract in a dermoid cyst. Dacryocystography was also performed in some atypical dermoid cysts cases. Furthermore, consultation with a neurosurgeon is highly recommended for dermoid cyst complicated by intracranial or intraspinal extension

In the majority of cases, dermoid cysts occur in the head and neck region, although they may be found anywhere on the body. In the head and neck region, dermoid cysts can most commonly be seen in the frontal, occipital, and supraorbital areas, with the outer third of the eyebrow being the most frequently affected region. An eyelid dermoid cyst attached to a tarsus may present as a firmly adherent non-tender upper eyelid nodule. A lower lid dermoid cyst may be evident as a painless, gradually enlarging swelling of the lower lid. Dermoid cysts in the medial canthal area may present as masses adherent to lacrimal canaliculi.

Dermoid cysts usually occur as solitary lesions; however, multiple concurrent dermoid cysts have also been reported. Dermoid cysts typically present as a pale, flesh-colored, pearly, dome-shaped, firm, deep-seated, subcutaneous nodule. They are usually asymptomatic, non-pulsatile, and non-compressible. Hair protruding from a dermoid cyst punctum is pathognomic for dermoid cysts. midline dermoid cyst may present as a pit that secreted sebaceous material that can become intermittently inflamed and infected.

Pathophysiology & Histology

Dermoid cysts result from an abnormal alteration in fetal development. They occur due to the abnormal sequestration and inclusion of the surface ectoderm along the lines of skin fusion during embryologic development. Due to this abnormality, a dermoid cyst can usually be found along cranial sutures or the anterior fontanelle.

Dermoid cyst on histology shows a well-defined wall lined by stratified squamous epithelium and a lumen that may be filled with mature adnexal structures of mesodermal origin, such as hair follicles and shafts, sebaceous and eccrine glands.

Pathological features of epidermoid cysts are oily or cheesy, tan, yellow, white material and the cyst wall is a fibrous capsule usually 2-6 mm in thickness.Total excision is the main treatment for intraoral epidermal cystic lesions since needle aspiration or fenestration might lead to infection, pain, and complaints after treatment. Marsupialisation is another alternative for management of large cysts. Lesions above the mylohyoid muscles are operated on intraorally, whereas those below the muscle are removed via an incision in the neck, however, if there is a very large sublingual cyst above the mylohyoid muscle, an extraoral approach may be preferred. An intraoral approach avoids a conspicuous scar, and the recovery time is shorter.

The epidermoid cyst rarely discloses malignancy, but isolated cases of premalignant and malignant conditions (Bowen's disease, Paget's disease, and squamous cell carcinoma) have been found in their walls. A deep dermoid cyst in the upper eyelid is not generally detected until they increase in size. Precise diagnosis and surgical removal is important because cyst growth can cause proptosis, diplopia and can restrict eye movement. Complications of epidermoid cysts of the floor of the mouth include disfigurement, difficulty in swallowing and airway compromise. In addition, it can become infected.

Management

Dermoid cysts usually tend to grow slowly, further having the potential to cause bony deformities, intracranial extension, or intraspinal extension. The presence of intracranial extension or intraspinal extension can further lead to meningitis or develop into an abscess. A small, asymptomatic dermoid cyst may not necessitate immediate excision as it can be stable for years or even regress. However, because most dermoid cysts grow over time, complete surgical excision without disruption of the cyst wall by an experienced surgeon is recommended before the development of such complications.

Early resection may also avoid extensive surgery and a shorter skin incision, further resulting in an improved cosmetic outcome. An additional advantage of surgical excision is the possibility of obtaining a histological diagnosis due to the rare possibility of a malignant tumor presenting as a solitary lump in the head and neck region of a child like a dermoid cyst. The most dermoid cysts can be removed using a direct approach with careful dissection at the site where the cyst adheres to the bone. If the cyst wall ruptures at the time of surgical removal, then remnant tissue should be removed using curettage and copious irrigation.

If the cyst wall has adhered to vital structures, a partial excision may be performed. Recurrences of dermoid cyst have been seen in cases of incomplete excision. Another benefit of early removal of dermoid cysts is a higher chance of obtaining a complete excision without disruption of the cyst wall, a factor associated with a reduced risk of recurrence. For small dermoid cysts, endoscopic surgery is a novel approach for removal. In cases of a dermoid cyst with intracranial extension, a craniotomy may still be required.

REFERENCES

1. Julapalli MR, Cohen BA, Hollier LH, Metry DW. Congenital, ill-defined, yellowish plaque: the nasal dermoid. Pediatr Dermatol. 2006 Nov-Dec; 23(6):556-9.
2. Nakajima K, Korekawa A, Nakano H, Sawamura D. Subcutaneous dermoid cysts on the eyebrow and neck. Pediatr Dermatol. 2019 Nov; 36(6):999-1001.
3. Orozco-Covarrubias L, Lara-Carpio R, Saez-De-Ocariz M, Duran-McKinster C, Palacios-Lopez C, Ruiz-Maldonado R. Dermoid cysts: a report of 75 pediatric patients. Pediatr Dermatol. 2013 Nov-Dec;30(6):70
4. Prior A, Anania P, Pacetti M, Secci F, Ravegnani M, Pavanello M, Piatelli G, Cama A, Consales A. Dermoid and Epidermoid Cysts of Scalp: Case Series of 234 Consecutive Patients. World Neurosurg. 2018 Dec;120:119-124.
5. Pollard ZF, Calhoun J. Deep orbital dermoid with draining sinus. Am J Ophthalmol. 1975 Feb; 79(2):310-3.
6. McAvoy JM, Zuckerbraun L. Dermoid cysts of the head and neck in children. Arch Otolaryngol. 1976 Sep; 102(9):529-31.
7. Sorenson EP, Powel JE, Rozzelle CJ, Tubbs RS, Loukas M. Scalp dermoids: a review of their anatomy, diagnosis, and treatment. Childs Nerv Syst. 2013 Mar;29(3):375-80.
8. Sathananthan N, Moseley IF, Rose GE, et al. The frequency and clinical significance of bone involvement in outer canthus dermoid cysts. Br J Ophthalmol. 1993;77:789–94.
9. Richards AM. Key notes on plastic surgery. Oxford: Blackwell Publishing; 2002.
10. Mann GS, Gupta A, Cochrane DD, et al. Occipital dermoid cyst associated with dermal sinus and cerebellar abscesses. Can J Neurol Sci. 2009;36:487–90.
11. Posnick JC, Bortoluzzi P, Armstrong DC, et al. Intracranial nasal dermoid sinus cysts: computed tomographic scan findings and surgical results. Plast Reconstr Surg. 1994;93:745–54.
12. Guerrissi JO. Endoscopic excision of frontozygomatic dermoid cysts. J Craniofac Surg. 2004;15:618–22.