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Case Report

Surgery Section

Cavernous Haemangioma in the Supraclavicular Region: A Case Report

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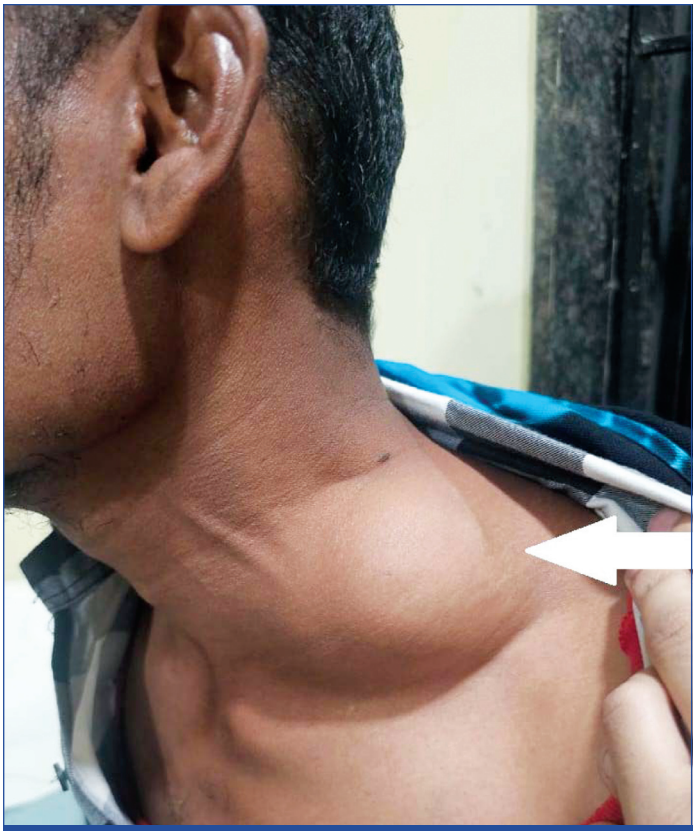
ABSTRACT

Cavernous haemangiomas are benign vascular malformations that usually present in infancy or childhood; adult-onset lesions in the supraclavicular region are exceedingly rare. The present case report is of a 33-year-old Indian male who presented with a progressively enlarging, painless cystic swelling in the left supraclavicular region of four months' duration. Ultrasonography and Contrast-Enhanced Computed Tomography (CECT) further showed a benign cystic lesion along with cystic lymphangioma, considered as the primary differential diagnosis. The patient underwent complete surgical excision with meticulous dissection and preservation of adjacent neurovascular structures. Intraoperatively, lesion also showed a characteristic vascular appearance. Histopathological examination of the excised specimen further helped to confirm the diagnosis of cavernous haemangioma. The present case report highlights the importance of considering cavernous haemangioma in the differential diagnosis of adult supraclavicular masses and notes that complete surgical excision is a safe and definitive treatment modality.

Keywords: Adult neck mass, Cystic lymphangioma, Histopathology, Posterior triangle, Vascular malformation

CASE REPORT

A 33-year-old Indian male presented to the Outpatient Department with a swelling over the left lateral aspect of the neck for the last four months. The swelling was insidious in onset, gradually progressive in nature, initially measuring 4×4 cm and reaching 10×10 cm at the time of presentation, as shown in [Table/Fig-1].



[Table/Fig-1]: A well-defined, soft, cystic, non tender swelling measuring in the left lateral aspect of neck (white arrow).

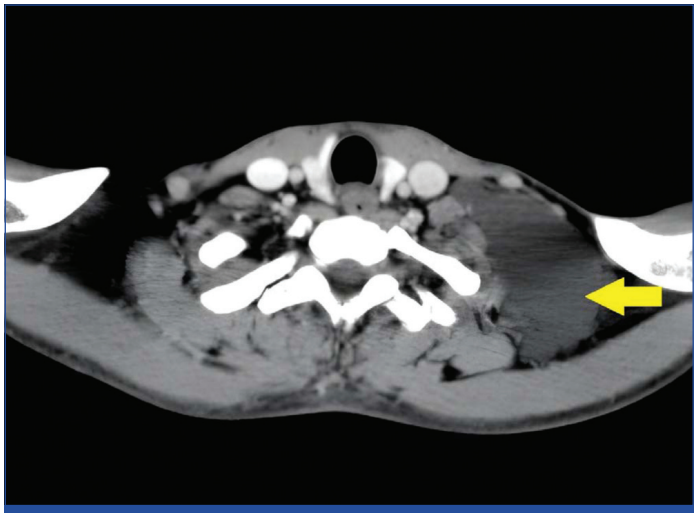
There was no associated aggravating or relieving factors. The patient reported a history of heavy weightlifting, occasional falls, but denied any definite history of trauma. There was no associated history of fever, chronic cough, breathlessness, nausea, vomiting, seizures, haematemesis, haematuria, or bowel and bladder complaints. The patient also denied any prior medical or surgical treatment, and no known co-morbidities such as diabetes mellitus, hypertension, asthma, tuberculosis, seizure disorder or Coronavirus Disease-2019 (COVID-19) were present. The patient also reported alcohol consumption once weekly for the past three years, as well as *kharra* (tobacco and areca nuts mixture) chewing (one packet per day) for two years, with occasional tobacco use.

On general examination, the patient had a moderate build and was well-nourished, afebrile, and haemodynamically stable. Systemic examination was within normal limits, and no abnormalities were detected. Local examination of the patient revealed a well-defined, soft, cystic, non tender swelling measuring approximately 10×10 cm in the left lateral aspect of the neck in the posterior triangle of the neck in the supraclavicular region. The swelling was non adherent to both overlying skin and underlying structures, non pulsatile and showed no signs of inflammation, such as erythema, local rise in temperature, oedema, or pain. There were no associated skin changes, dilated veins, or discharging sinus.

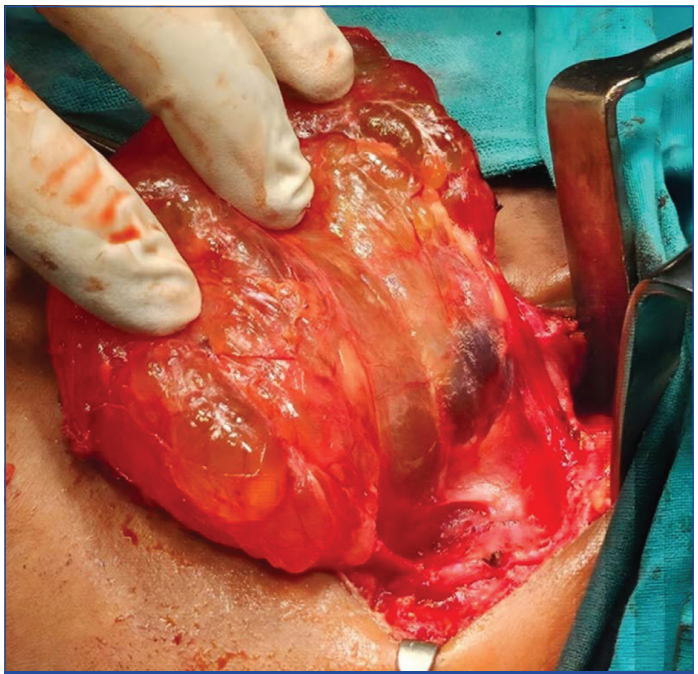
Routine haematological, biochemical, and serological investigations, chest radiography, electrocardiography, and serological tests were performed and were within normal limits. Ultrasonography of the neck showed a well-defined cystic lesion with anechoic content and internal septations in the left supraclavicular region, without the presence of internal calcification or vascularity. CECT of the neck also revealed a well-defined, non enhancing cystic lesion in the intermuscular plane of the left supraclavicular region, which was extending from the lower cervical to upper thoracic levels and causing displacement of adjacent muscles, suggestive of a benign lesion, with cystic lymphangioma considered as a radiological differential diagnosis as shown in [Table/Fig-2]. Other differential diagnoses considered were congenital cystic hygroma, multinodular goitre and salivary gland retention cysts. However, the absence of a typical anatomical location, lack of solid components or internal vascularity, and non infiltrative nature on imaging made these differentials less likely.

After adequate preoperative evaluation, patient thereby underwent surgical excision of the cystic swelling under general anaesthesia. Intraoperatively, a large cystic mass which was extending around clavicular region was identified and excised in toto with careful preservation of the brachial plexus and subclavian vessels as shown

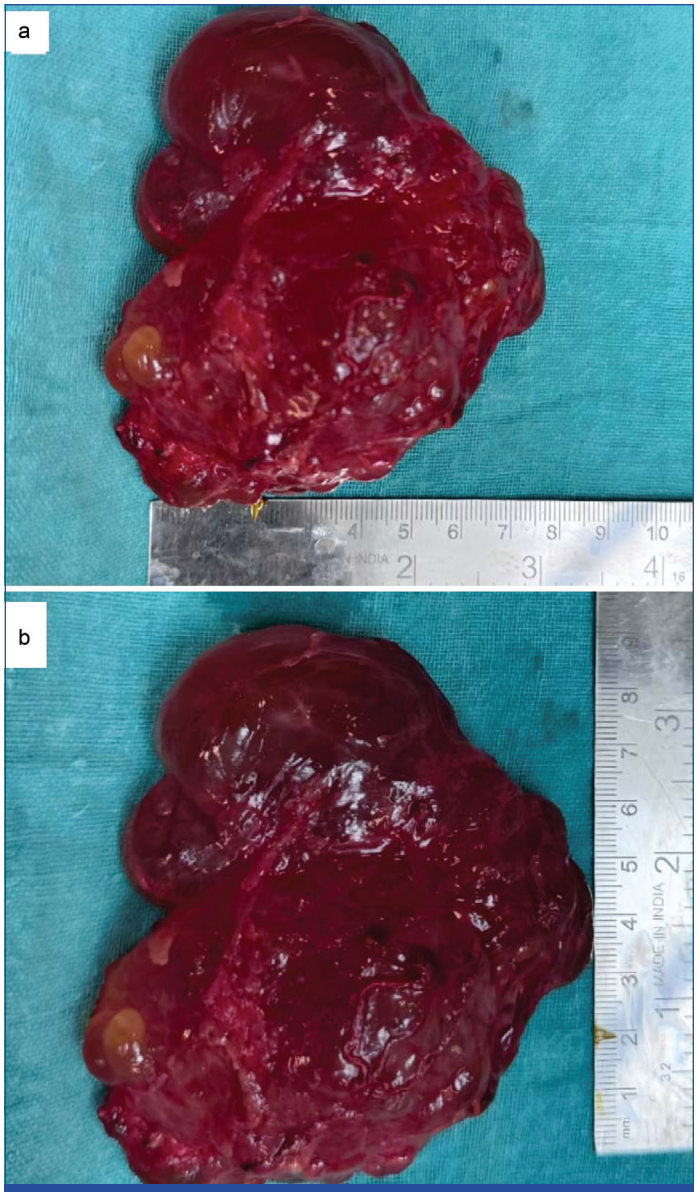
in [Table/Fig-3]. The lesion showed a characteristic raspberry-like appearance, having multiple dilated, blood-filled cavernous spaces, which is suggestive of a vascular origin. Gross excised specimen of left supraclavicular cavernous haemangioma is shown in [Table/Fig-4]. The procedure was uneventful, after which the patient was shifted to the postoperative recovery room. The postoperative course of the patient was uneventful, and he was advised to begin early upper-limb physiotherapy and to avoid strenuous activities. Histopathological examination {Haematoxylin and Eosin (H&E)} of the excised specimen showed dilated, blood-filled vascular spaces lined by flattened endothelial cells, consistent with cavernous haemangioma, as shown in [Table/Fig-5]. At subsequent clinical review approximately four weeks later, the patient remained asymptomatic, with no signs of recurrence of swelling, pain, or cosmetic deformity.



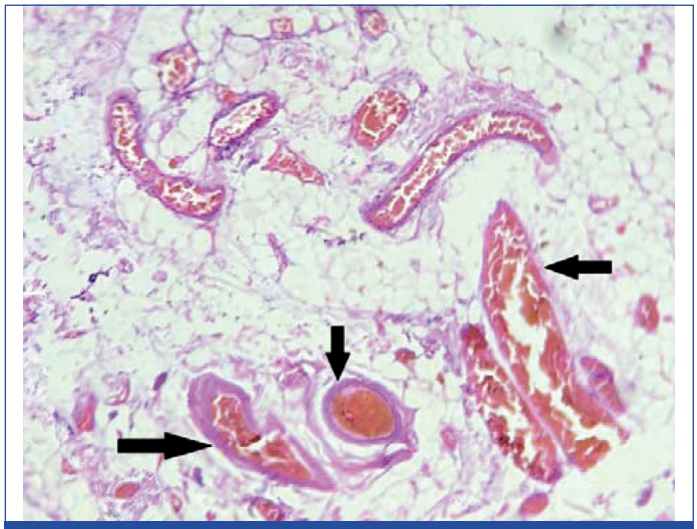
[Table/Fig-2]: CECT of neck showing left supraclavicular cystic lesion (yellow arrow).



[Table/Fig-3]: Intraoperative view showing a large cystic mass in the left supraclavicular region with careful dissection.



[Table/Fig-4]: Gross excised specimen of left supraclavicular cavernous haemangioma; single, irregular greyish-brown specimen of the excised mass: (a) Horizontal; (b) Vertical.



[Table/Fig-5]: The histopathology image suggestive of diagnosis of cavernous haemangioma; showing dilated, blood-filled vascular spaces lined by flattened endothelial cells pointed with black arrow; (H&E stain, x10).

DISCUSSION

Cavernous haemangiomas are benign vascular malformations characterised by the presence of large, dilated, blood-filled vascular spaces lined by flattened endothelial cells, separated by scant connective tissue stroma [1]. Cavernous haemangiomas are currently classified as low-flow vascular malformations resulting from dysregulated angiogenesis and abnormal vascular morphogenesis [2]. At the molecular level, alterations in signalling pathways regulating vascular development, particularly involving endothelial cell junction proteins and angiogenic factors, leading to increased vascular permeability and progressive ectasia of vascular spaces [2,3]. These structural abnormalities predispose lesions to slow expansion, thrombosis and occasional haemorrhage, usually in deep-seated locations [3].

Parameters	Akbari M et al., [8]	Anajar S et al., [9]	Sahniar N et al., [10]	Present case
Age/Gender/Country	24y/Female/Iran	62y/Female/Morocco	36y/Female/ Indonesia	33y/Male/India
Duration of swelling	2 years	6 years	2 years	4 months
Location	Right supraclavicular	Left supraclavicular	Right supraclavicular	Left lateral neck (posterior triangle, supraclavicular)
Symptoms/Signs	Painless, firm, semi-mobile	Slowly enlarging, firm, tense, non pulsatile	soft, non pulsatile, partially compressible fixed mass s	Soft, cystic, non tender, non pulsatile, non adherent to overlying skin or underlying structures
Imaging findings	CT: heterogeneous solid lesion infiltrating SCM; USG suggested vascular lesion	USG, CT: suggested cervical lymphadenopathy	USG: vascular; CECT: showed a soft tissue mass arising from the right chest wall, attached with the serratus anterior muscle.	USG: cystic lesion with septations, no vascularity; CECT: non enhancing cystic lesion, intermuscular plane, displacing adjacent muscles
Surgical approach	Excision after ligation of pedicle; within SCM	The pedicle of the mass was ligated flush with the internal jugular vein, and the swelling was excised completely.	Dual supraclavicular + infraclavicular approach	Horizontal supraclavicular incision; careful dissection preserving brachial plexus and subclavian vessels
Intraoperative findings	Thrombosed vascular mass arising in SCM	Thrombosed vascular mass arising from IJV	Vascular mass adherent to major vessels	Large cystic mass with multiple dilated blood-filled cavernous spaces
Histopathology	Cavernous haemangioma: dilated vascular channels lined by flat endothelium	Cavernous haemangioma: fibrofatty tissue with thick-walled vessels, some thrombosed	Cavernous haemangioma	Cavernous haemangioma: dilated blood-filled vascular spaces lined by flattened endothelial cells
Postoperative course and Follow-up	NA	Uneventful; no recurrence at 6 months	Uneventful, discharged day 3	Uneventful; no recurrence at 4 weeks; physiotherapy advised; avoid heavy weightlifting

[Table/Fig-6]: Comparative summary of previously reported cases of cavernous haemangioma and the present case [8-10].
CT: Computed tomography; USG: Ultrasonography; SCM: Sternocleidomastoid; IJV: Internal jugular vein

Cavernous haemangiomas can occur in virtually any type of anatomical location, most usually involving the central nervous system, liver, skin, and soft tissues, with their clinical behaviour being largely determined by lesion size, depth and proximity to vital neurovascular structures [2,4]. Although many lesions also remain asymptomatic, progressive enlargement can result in mass effect, cosmetic deformity, and functional compromise, thereby further warranting a surgical intervention [4,5]. The aetiology behind cavernous haemangiomas is not fully understood, but they are currently thought to be congenital vascular malformations which arise due to aberrant angiogenesis rather than true neoplastic proliferation [3]. Hormonal influences, especially inclusive of oestrogen, have also been implicated in lesion growth in some patients [3].

In the present case, cystic lymphangioma was considered as the primary radiological differential due to its cystic nature and internal septations; however, the absence of typical infiltrative margins as well as lack of fluid-fluid levels, made it less likely [6]. A branchial cleft cyst was also considered but excluded because of its atypical location, absence of a characteristic anatomical relationship with the sternocleidomastoid muscle [6]. Lymphadenopathy was unlikely given the absence of solid components, necrosis or systemic features [7]. Lipoma was ruled out based on the cystic appearance on imaging rather than the fat density [7]. The non-pulsatile nature as well as the absence of bruit further reduced the likelihood of a high-flow vascular lesion with definitive diagnosis established on histopathology.

In a case reported by Akbari M et al., a 24-year-old woman presented with a painless, slowly enlarging supraclavicular mass that initially raised suspicion of a malignant lesion. Surgical excision was performed, and histopathology confirmed cavernous haemangioma [8]. The postoperative course was uneventful without recurrence at six months of follow-up [8]. In a case reported by Anajar S et al., a 62-year-old woman presented with a long-standing, painless supraclavicular swelling initially misdiagnosed as cervical lymphadenopathy. Surgical exploration revealed a vascular mass arising from the internal jugular vein, which was completely excised [9]. Histopathology also confirmed cavernous haemangioma. The postoperative course was uneventful without recurrence at follow-up [9]. In a case reported by Sahniar N et al., a 36-year-old woman presented having a slow-growing, painless supraclavicular mass, clinically suggestive of a benign vascular lesion [10]. Imaging, Fine Needle Aspiration Biopsy (FNAB) also supported diagnosis and complete surgical excision was performed using a dual approach with careful preservation of adjacent neurovascular structures [10]. Histopathology confirmed cavernous haemangioma along with dilated vascular channels [10]. The patient had an uneventful recovery thus emphasising effectiveness of surgical management in such cases [10]. Comparative summary of previously reported cases of cavernous haemangioma and the present case is depicted in [Table/Fig-6] [8-10].

Imaging modalities such as contrast-enhanced Magnetic Resonance Imaging (MRI) and CT are useful in both diagnosing and determining the extent of a cavernous haemangioma, along with the vascular characteristics of the lesion, to plan for treatment [1,11]. In cases, minimally invasive approaches like sclerotherapy with the use of agents such as ethanol, bleomycin have shown efficacy, usually in low-flow vascular malformations, by inducing endothelial damage and fibrosis, thereby reducing lesion size [12].

Surgical excision is still regarded as the best option and the most definitive approach to treat symptomatic cavernous haemangioma, especially if lesion is in an accessible area, because surgical excision allows for complete removal, histopathological confirmation of the diagnosis, and minimisation of the risk of recurrence [5]. Laser and radiotherapy have only limited usefulness for the treatment of cavernous haemangiomas which are usually reserved for cases in which the haemangioma is unresectable or recurrent [13].

CONCLUSION(S)

Cavernous haemangiomas of adult onset in the supraclavicular region are exceptionally rare and usually pose diagnostic challenges due to their nonspecific clinical and radiological features. Early identification of the condition, as well as complete excision, not only helps prevent functional compromise and cosmetic deformity but also minimises the risk of recurrence, thereby underscoring the importance of individualised surgical planning in such unusual adult presentations.

Authors' contributions: YT contributed to patient management, data collection, manuscript drafting, and final approval of the version to be published. RG was involved in surgical management, critical revision of the manuscript for important intellectual content, and overall supervision. KS assisted in patient management, data interpretation, and manuscript editing. SP contributed to literature review, data collection, and manuscript preparation. BS contributed to literature search, drafting of the manuscript, and formatting. All

authors read and approved the final manuscript and agree to be accountable for all aspects of the work.

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