

Primary cervical hydatid cyst presenting as a subcutaneous neck mass: ten-year recurrence-free outcome without albendazole

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ABSTRACT

Hydatid disease, caused by *Echinococcus granulosus*, predominantly involves the liver and lungs; primary soft-tissue involvement is exceedingly rare. Cervical localization accounts for <1% of all reported cases. Because of its atypical anatomical site and nonspecific clinical features, diagnosis is challenging, and the lesion may easily mimic benign cystic masses. We present a rare case of a primary hydatid cyst located in the left posterior cervical triangle (Level V) of a 41-year-old woman from an endemic rural region in Eastern Anatolia, Türkiye. The lesion was excised en bloc under local anesthesia, which was deemed appropriate due to its superficial position and limited size. Intraoperatively, a thick-walled cyst was identified within the subcutaneous plane. A focal pericystic breach was noted; however, the cyst was removed without spillage, and the operative field was irrigated with hypertonic saline. Histopathological evaluation confirmed a fertile hydatid cyst. Postoperative thoracoabdominal imaging and serological testing revealed no visceral involvement. Given the complete excision without contamination and the absence of systemic disease, postoperative albendazole therapy was not initiated. No recurrence was detected during a ten-year follow-up period. Hydatid disease should be considered in the differential diagnosis of cystic neck masses, particularly in patients from endemic areas. When feasible, meticulous excision without cyst rupture can result in a sustained disease-free outcome. Long-term clinical and radiological surveillance remains essential. In selected patients, complete excision of a primary cervical hydatid cyst without spillage may achieve long-term disease-free survival even without adjuvant albendazole therapy. Careful surgical technique and structured follow-up are critical for success.

Keywords: Hydatid cyst, *Echinococcus granulosus*, neck mass, posterior cervical triangle, case report

INTRODUCTION

Cystic echinococcosis (CE), also known as hydatid disease, is a zoonotic parasitic infection caused by the larval form of *Echinococcus granulosus*.¹ The disease remains a major public health concern in endemic regions such as the Mediterranean basin, the Middle East, South America, and parts of Asia and Africa.² Humans become accidental intermediate hosts through direct contact with infected dogs or consumption of food or water contaminated with parasite eggs.³

The liver (50-70%) and lungs (20-30%) constitute the primary target organs.⁴ Extrahepatic and extrapulmonary localizations are relatively uncommon, comprising only about 10% of all cases.⁵ Among these, soft-tissue and subcutaneous hydatid cysts are exceptionally rare, representing approximately 1-2% of reported cases.⁶ Primary subcutaneous hydatid cysts without concomitant visceral involvement are even rarer and are thought to arise from hematogenous or lymphatic dissemination of the embryos.⁷

Cervical hydatid disease constitutes an exceedingly uncommon form of extrahepatic involvement. The rich lymphatic and vascular drainage of the neck is believed to hinder larval implantation.⁸ Supraclavicular involvement,

particularly, is extremely rare, with only a limited number of cases reported in the literature.⁹ In this region, hydatid cysts may clinically resemble benign lesions such as lipoma, epidermoid cyst, branchial cleft cyst, or lymphadenopathy.¹⁰

Diagnosis is often challenging, especially in isolated soft-tissue disease, as serological tests may be negative due to low antigenic stimulation.⁷ Although ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI) can demonstrate characteristic cystic morphology, atypical cervical presentations may remain inconclusive.¹¹ Consequently, definitive diagnosis is frequently made intraoperatively and confirmed by histopathological examination.¹²

Despite isolated case reports, long-term outcomes of primary hydatid cysts located in the posterior cervical triangle (Level V) remain poorly documented, particularly in patients treated successfully with complete excision alone without adjuvant albendazole therapy. Herein, we present a rare case of a primary isolated subcutaneous hydatid cyst in the left posterior cervical triangle, excised without spillage under local anesthesia, with no recurrence observed during ten years of postoperative follow-up.

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CASE

A 41-year-old woman residing in a rural endemic area presented with a painless swelling in the left posterior cervical triangle that had gradually increased in size over the course of one year. She had no history of trauma, fever, weight loss, or chronic illness (Figure 1). The patient reported long-term contact with domestic and farm animals.

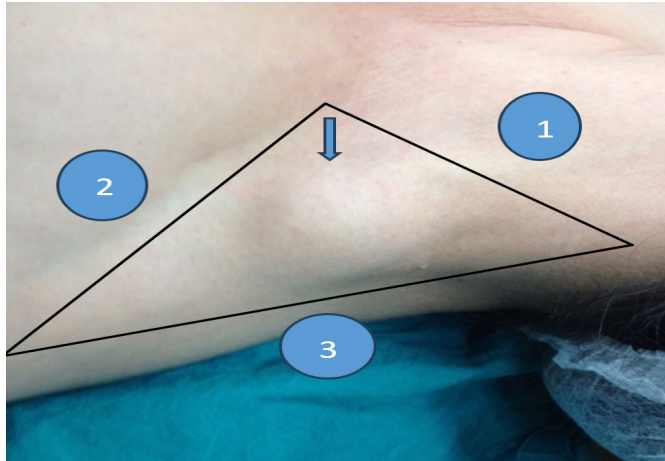


Figure 1. Preoperative appearance of a subcutaneous mass in the left posterior cervical triangle (1) Sternocleidomastoid muscle, (2) Clavicle, (3) Anterior border of the trapezius muscle. Hydatid cyst (indicated by arrow)

On physical examination, a well-defined, mobile, non-tender subcutaneous mass measuring approximately 5×3 cm was palpated in the left posterior cervical region. Routine laboratory findings were within normal limits. Because hydatid disease was not initially suspected, preoperative serologic testing was not performed. Ultrasonography demonstrated a well-circumscribed, anechoic cystic lesion measuring 32×23 mm.

Surgical excision was performed under local anesthesia. Intraoperatively, a thick-walled cyst was identified in the subcutaneous plane (Figure 2). During careful dissection, a minor pericystic breach of approximately 2 cm was observed; however, the cyst was removed without macroscopic spillage of daughter cysts or other cyst contents (Figure 3). The operative field was irrigated with 3% hypertonic saline to minimize the risk of contamination (Figure 4). In view of the complete excision, absence of visible spillage, and lack of systemic involvement, adjuvant medical therapy was deemed unnecessary.



Figure 2. Intraoperative view showing the opened pericystic layer during dissection under local anesthesia
Pericystic layer opened during dissection



Figure 3. Operative field after cyst excision showing the preserved external jugular vein and hypoglossal nerve
The cyst base showing the external jugular vein and hypoglossal nerve



Figure 4. Complete cyst excision without rupture or spillage of cystic contents
Intraoperative image showing complete cyst excision without rupture or spillage of daughter cysts or cyst fluid

Gross examination revealed a whitish laminated cyst wall, while histopathological evaluation confirmed a fertile hydatid cyst with laminated membrane and surrounding inflammatory reaction (Figures 5, 6, and 7). Postoperative thoracoabdominal imaging showed no additional lesions, and serological testing was negative for *Echinococcus* infection. Albendazole therapy was not administered.

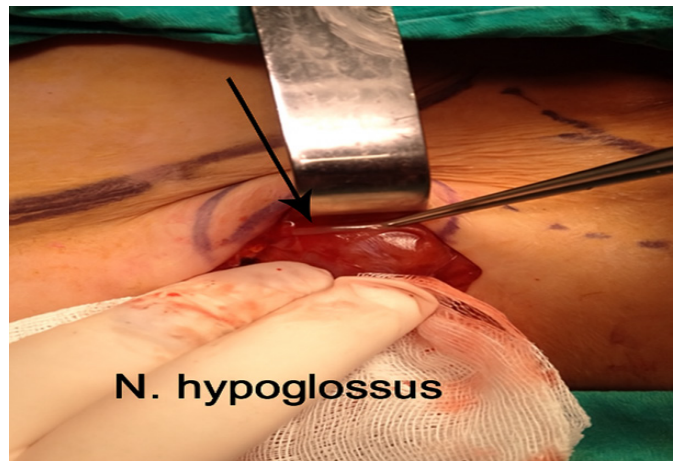


Figure 5. Intact pearly-white germinative membrane of the cyst with the hypoglossal nerve (arrow) visible on the surface
Intraoperative image showing intact germinative membrane and branch of the hypoglossal nerve (arrow)

The patient underwent postoperative follow-up with serology, ultrasonography, and clinical evaluation at 3, 6, 9, and 12 months, and annually thereafter. At the tenth year of follow-up, neck and hepatobiliary ultrasonography, chest radiography, and serological tests demonstrated no evidence of recurrence.

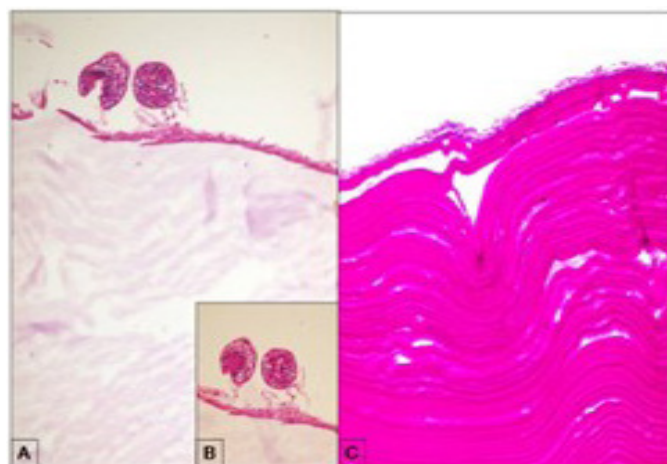


Figure 6. Microscopic image showing protoscolexes within the germinative layer (H&E, ×100)

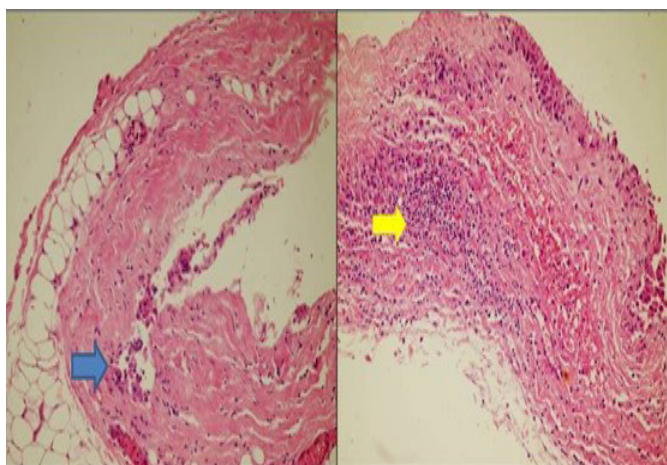


Figure 7. Laminated membrane of the cyst with surrounding inflammatory reaction in fibroadipose tissue (H&E, ×200).

Microscopic image showing laminated membrane of the hydatid cyst with inflammatory reaction in the surrounding fibroadipose tissue (Hematoxylin & Eosin, ×200)

DISCUSSION

Hydatid disease primarily affects the liver and lungs, whereas involvement of soft or subcutaneous tissues is exceedingly uncommon, accounting for only 1-2% of all cases.¹³ Primary isolated subcutaneous cysts without visceral involvement are exceptionally rare. In the cervical region, active muscular contractions and extensive lymphatic drainage are believed to

hinder larval implantation.^{14,15} Consequently, localization within the posterior cervical triangle (Level V) is extremely rare and often misdiagnosed because of its nonspecific clinical features.¹⁶

Subcutaneous hydatid cysts typically present as slowly enlarging, painless swellings that resemble benign lesions such as lipoma, epidermoid cyst, or branchial cleft cyst.⁶ In the present case, the lesion was presumed benign preoperatively, and the diagnosis of hydatid disease was established intraoperatively. This reflects the general diagnostic challenge posed by the absence of characteristic clinical or imaging findings in isolated soft-tissue hydatidosis.¹¹

Serological assays may contribute to diagnosis; however, false-negative results are common because localized soft-tissue disease produces limited antigenic stimulation.¹⁷ Consistent with previous reports, postoperative serology was negative in our patient. Ultrasonography is the preferred initial imaging modality, but classical hydatid features—such as daughter cysts or hydatid sand—are frequently absent in atypical extrahepatic presentations.

Surgical excision remains the definitive treatment for hydatid cysts. The fundamental surgical principle is complete removal of the cyst without rupture, thereby preventing dissemination and recurrence.¹⁸ In the present case, despite a small pericystic defect, meticulous dissection allowed intact excision without macroscopic spillage, and the patient has remained recurrence-free for ten years.

The role of adjuvant albendazole following total excision remains controversial. While some authors advocate its routine use in cases involving intraoperative rupture, multiple cysts, or visceral involvement, others note that it may be unnecessary after complete removal of an isolated, intact cyst.¹⁹ Recent expert consensus—including the Turkish HPB Surgery Association guidance aligned with WHO-IWGE recommendations—emphasizes that perioperative albendazole is primarily indicated in patients with multiple cysts, systemic involvement, or a risk of intraoperative contamination, whereas individualized decision-making is appropriate after uncomplicated complete excision.²⁰ Our long-term outcome aligns with these recommendations, demonstrating sustained disease-free status without antiparasitic therapy.

The table summarizes demographic characteristics, localization, serological status, surgical approach, use of albendazole, and clinical outcomes (**Table**).^{9,12,15-17}

A review of previously reported cervical and supraclavicular hydatid cysts (**Table**) indicates a predominance among women aged 20-45 years, suggesting that certain hormonal or immunologic factors may influence soft-tissue localization.²⁶

Table. Summary of published cases of subcutaneous hydatid cysts in the cervical region*

Author/year	Age/sex	Localization	Serology	Treatment	Albendazole	Outcome
Ok et al. (2000) ²¹	45/M	Subcutaneous (head/neck)	Negative	Total excision	No	No recurrence (2 years)
Gul et al. (2015) ²²	36/F	Cervical region	Negative	Total excision	Yes	No recurrence (1 year)
Çelik et al. (2006) ²³	40/M	Cervical region	Not reported*	Cystectomy	No	No recurrence (8 months)
Tbini et al. (2021) ²⁴	28/F	Cervical region (supraclavicular area)	Not reported	Total excision	Yes	No recurrence (1 year)
Muhedin et al. (2022) ²⁵	30/F	Cervical region	Negative	Total excision	Yes	No recurrence (1 year)
Muhedin et al. (2022) ²⁵	33/F	Cervical region	Negative	Total excision	Yes	No recurrence (1 year)
Present case (2025)	41/F	Cervical region (posterior triangle, level V)	Negative	Total excision	No	No recurrence (10 years)

*: The table adapted from previously reported cases in the literature.^{9,12,15-17}

Most cases presented as painless masses with negative serology, reinforcing the diagnostic challenges associated with isolated soft-tissue hydatidosis. Regardless of whether albendazole was administered, all reported patients remained disease-free following meticulous total excision-highlighting that surgical completeness, rather than adjuvant therapy, appears to be the principal determinant of outcome.

To the best of our knowledge, the present case represents the longest recurrence-free follow-up (10 years) reported for a primary subcutaneous hydatid cyst of the cervical region. Despite the absence of a preoperative diagnosis, complete surgical removal and diligent postoperative surveillance resulted in a sustained disease-free course. This outcome underscores the importance of surgical precision and long-term follow-up in the management of extrahepatic hydatidosis.

In conclusion, this case reinforces that complete cyst excision without rupture can achieve definitive, long-term control even in the absence of antiparasitic therapy. A high index of suspicion, careful intraoperative handling, and continued radiological and clinical monitoring remain essential for the successful management of this rare cervical localization.

CONCLUSION

Primary isolated cervical hydatid cysts are extremely rare and may pose significant diagnostic challenges. This case underscores the importance of including hydatid disease in the differential diagnosis of cystic neck masses, particularly in patients from endemic regions. Complete excision without rupture remains the key determinant of successful long-term control, and adjuvant antiparasitic therapy may be individualized in cases where the cyst is removed intact. Long-term clinical and radiological follow-up is essential to confirm sustained disease-free status.

ETHICAL DECLARATIONS

Informed Consent

Written informed consent was obtained from the patient(s) included in this report. Signed consent forms are retained by the authors and are available upon request.

Peer Review Process

This report underwent external peer review.

Conflict of Interest

The authors declare no conflicts of interest.

Financial Disclosure

This case report did not receive any financial support.

Author Contributions

Concept: B.B.; Design: B.B.; Control: M.S.S.; Data collection and/or processing: M.S.S.; Analysis and/or interpretation: M.S.S.; Literature review: S.D.; Article writing: T.S.; Critical review: All authors.

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