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Incidental bilateral ovarian dermoid cysts discovered at cesarean section after an uncomplicated pregnancy: a case report highlighting antenatal diagnostic limitations

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Abstract

Adnexal masses are detected in approximately 1.5–3% of pregnancies, the majority being benign. Dermoid cysts (mature cystic teratomas) are the most common benign ovarian tumors and are rarely large or bilateral in pregnancy. We report a rare case of incidentally detected bilateral ovarian dermoid cysts at term during cesarean section. A 31-year-old primigravida at 37+5 weeks of gestation underwent lower segment cesarean section for failed induction of labor with prelabor rupture of membranes. Antenatal ultrasonography showed no adnexal abnormalities. Intraoperatively, bilateral ovarian cysts were discovered: an 6 × 7 cm right ovarian cyst with complete ovarian involvement and a 4 × 3 cm left ovarian cyst. Right oophorectomy and left ovarian cystectomy were performed. Histopathology confirmed mature cystic teratomas with no malignant features. The postoperative course was uneventful. This case highlights the diagnostic limitations of late-pregnancy ultrasonography due to its largely asymptomatic nature both clinically and radiologically and supports removal of incidental adnexal masses during cesarean section to prevent future complications and reoperation.

Keywords: Cesarean section, Dermoid cyst, Ovarian Neoplasm, Pregnant Women, Mature ovarian teratoma

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Introduction

The incidence of adnexal masses during pregnancy is estimated to be 1.5–3%, among which only 5% are malignant. Among benign types, dermoid cysts (mature cystic teratomas) are the most common, accounting for 10–25% of ovarian masses and occurring bilaterally in 10–15% of cases.[1] Large ovarian dermoid cysts are rare in pregnancy, comprising about 1% of ovarian cysts.[2] They are slow-growing tumors, and rapid enlargement during pregnancy is uncommon.[3]

Approximately 0.3% of pregnancies contain a dermoid cyst, which is usually detected incidentally during the second trimester.[4] The most frequent benign ovarian tumors diagnosed during pregnancy are cystic teratomas.[5] Most are asymptomatic and may go undetected due to small size, lack of symptoms, or obscuration by the gravid uterus during late pregnancy.[1,6] Incidental adnexal masses detected during cesarean section should be removed to exclude malignancy and prevent the need for future surgery.[7] Dermoid cysts originate from totipotent germ cells that differentiate abnormally into mature dermal tissues and are prone to complications such as torsion and rupture, risks that increase with cyst size.[8,9] Dermoid cysts have more than fivefold risk of torsion and rupture during pregnancy and that risk increases with the size of the cyst.[10]

We present a rare case of bilateral dermoid cysts in pregnancy, incidentally detected during cesarean section, which fortunately did not complicate the pregnancy in any form.

Case Report

A 31-year-old primigravida presented to the maternity ward of Dhading Hospitalat 37+5 weeks of gestation (WOG) by date with the complaints of per vaginal leaking for eight hours. She was admitted with a provisional diagnosis of prelabor rupture of membranes (PROM). There was an adequate perception of fetal movements, she did not have abdominal pain, per vaginal bleeding or other associated symptoms. On examination, her general condition was fair with stable vitals. There were no signs of pallor, icterus, edema, lymphadenopathy or dehydration. On per abdominal examination, the uterus was term size with longitudinal lie and cephalic presentation, The fetal heart rate was 156 beats per minute. Per vaginal examination revealed a closed os, 20-30% effaced cervix, presence of show, absence of membranes and head at -3 station.

Routine investigations were within normal limits. Hemoglobin was 11.6 g/dl, her blood group was A positive, serological tests for Human Immunodeficiency Virus (HIV), Hepatitis B Surface Antigen (HbsAg), Hepatitis C Virus (HCV) and syphilis were non-reactive. Bleeding time, clotting time, and PT/INR were normal, and random blood sugar was 124 mg/dl.

Ultrasonography (USG) demonstrated a single live intrauterine fetus corresponding to 37 weeks 5 days of gestation with cephalic presentation, posterior placenta and an amniotic fluid index (AFI) of 13.4 cm. No adnexal abnormalities were identified in the USG.

As induction of labor failed, she was prepared for lower segment cesarean section (LSCS) with the diagnosis of primigravida at 37+5 WOG with failed induction of labor with PROM. Under spinal anesthesia and aseptic precautions, the abdomen was opened in layers. A live female baby weighing 2.5 kg was delivered with good APGAR scores at 1 minute and 5 minutes of life. The neonate was handed over to the pediatrics team. The placenta was delivered by controlled cord traction.

On routine examination of adnexal structures during cesarean section, bilateral ovarian cystic swellings were noted, which had not been detected in any antenatal scans. The right ovary contained a round, smooth, encapsulated cystic mass measuring approximately 6 x 7 cm with no visible ovarian tissue, Figure 1. Similarly, the left ovary showed a smaller cystic mass measuring 4 x 3 cm, Figure 1. Right oophorectomy with left ovarian cystectomy was performed. During excision, the cyst ruptured, releasing cheesy sebaceous material and hair. Approximately, 80% of the healthy left ovary was preserved. Hemostasis was secured and an omental biopsy and peritoneal fluids were collected for histopathological examination and cytology, respectively. The post-operative course was uneventful and the patient was discharged on the seventh post-operative day in a stable condition.

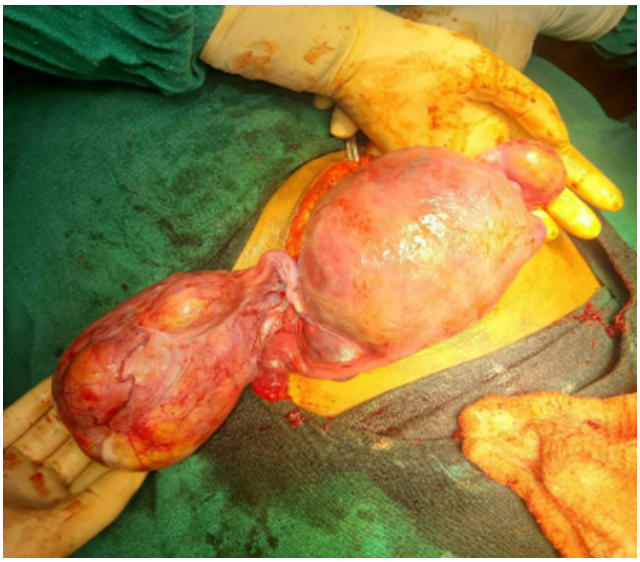

Figure 1. Incidentally discovered bilateral ovarian cysts during LSCS

Histopathological examination of both ovarian cysts confirmed the diagnosis of mature cystic teratoma

grossly and microscopically. On gross examination, right cyst measured 6x6x3 cm with cut section which showed a unilocular cyst filled with hair, yellow greasy material, without solid components, hemorrhagic or necrotic areas. Left cyst measured 1.5x1.5x 1cm &cut section showed hair and yellow greasy material.

Histopathological examination revealed similar morphology with focal normal ovarian follicles, corpus albicans and stroma along with predominant cystic structures. These cysts were lined by keratinizing stratified squamous epithelium, Figure 2.

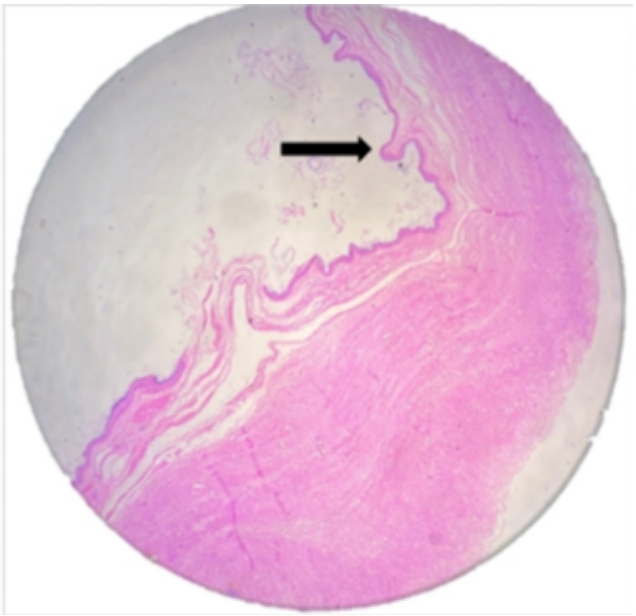

Figure 2. Black arrow pointing towards the cyst lined by keratinized squamous epithelium at 4X magnification

The wall of the cyst showed dermal adnexa and structures derived from various germ cell layers consisting of pseudostratified ciliated columnar epithelium, mature adipose tissue, mucinous glands, fibro collagenous tissue and blood vessels, Figure 3. No immature elements or evidence of malignancy noticed. The omental biopsy and peritoneal cytology were negative for malignancy.

Discussion

Adnexal masses in pregnancy are relatively uncommon and benign. Most of these masses are functional or benign cysts and among them, the most frequently encountered is the mature cystic teratoma.[11] These cysts remain asymptomatic during pregnancy and only those masses that remain persistent especially those noted in the second trimester and beyond require further investigations and interventions as they carry risk of complications.[12]

Routine obstetric USG has markedly increased the detection of adnexal masses, but significant limitations exist. Small masses are often found incidentally in the first or second trimester, but an enlarging gravid uterus greatly obscures adnexal views later in pregnancy.[13] Beyond 20 WOG, ultrasound evaluation

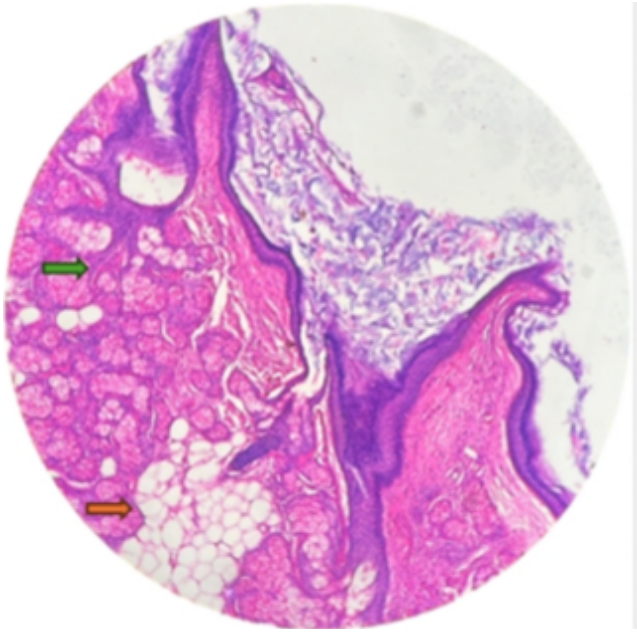

Figure 3. Green arrow showing underlying stroma with sebaceous gland along with mature adipocytes as shown by orange line highly suggestive of mature cystic teratoma

of ovaries becomes difficult due to increased uterine volume with roughly 20% of adnexal masses going undetected in pregnancy.[13] In our case a routine USG in the third trimester failed to identify any ovarian cyst, despite the right ovary harboring an 6 x 7 cm dermoid cyst and the left ovary a 4 x 3 dermoid cyst. This reflects the known imaging challenge and oversight i.e., the late gestation scans focus on fetal parameters and thus the ovaries which might be displaced in the abdomen might be missed.[12,13] When USG is inconclusive a Magnetic Resonance Imaging (MRI) may be used to further evaluate persistent adnexal lesions.[13] However, without clinical suspicion of an ovarian mass, advanced imaging is rarely pursued antenatally. This further solidifies that a normal late-pregnancy scan does not completely exclude sizable adnexal pathology.

Dermoid cysts are slow-growing tumors which can be influenced by pregnancy. Hormonal factors are thought to contribute to rare cases of rapid growth, although the typical growth rates are about 1-2 mm per year.[14] Dermoids contain mixed tissue elements thus making them prone to complications. Ovarian torsion is the most feared complication. During pregnancy, the risk of torsion increases by five-folds.[4] Any mass over 5 cm carries a high risk of torsion.[15] In our patient, the 6 cm right dermoid cyst fell well into this high-risk category. Torsion and rupture of a dermoid are surgical emergencies that can jeopardies the pregnancy, so the potential for such events must be weighed against the risks of intervention.[15,16]

When an adnexal mass is identified in pregnancy, management balances the risks of surgery against the risks of leaving it in place.[11] Cysts under 5 cm that

appear benign on imaging are often observed, as many will regress.[6] Cysts that are larger than 10 cm are generally removed proactively due to their high risk of torsion or rupture.[6,11] For masses in the 5-10 cm range, management is individualized based on ultrasound appearance and patient factors. If surgery is indicated, the second trimester is the preferred window because operating then tends to be easier.[11] Laparoscopic cystectomy is considered safe in pregnancy and is preferred over open surgery when possible. When surgery is performed with adequate obstetric support and precautions, outcomes for both mother and fetus are excellent.[11]

Any unexpected adnexal mass discovered during a cesarean section should be removed during the same operation.[6] This approach spares the patient a second surgery and also allows prompt histological examination to exclude malignancy. When removing an apparently benign cyst, cystectomy is generally recommended and oophorectomy is reserved for cases with concerning features.[6] In our patient, we performed a right oophorectomy due to complete ovarian involvement by the cyst and a left cystectomy, preserving 80% of the healthy left ovarian tissue. The decision to remove both cysts intra-operatively was in line with these recommendations and avoided the need for future interventions potentially.

Our case of bilateral dermoid cysts discovered at term is unusual but not without precedent. Most reported cases of ovarian teratomas in pregnancy are diagnosed antenatally or they present with symptoms in mid-pregnancy. A similar case report described a 27-year-old at 39 weeks gestation who was found to have bilateral ovarian dermoid cysts and underwent cesarean delivery with simultaneous extirpation of both cysts.[17] Another report noted a patient with bilateral dermoids who was managed with elective cesarean and bilateral cystectomy at term.[18] These cases, like ours, highlight that large adnexal masses may remain occult until the time of delivery. The absence of symptoms in our patient is fortunate but also deceptive, underscoring how even sizable cysts can be clinically silent in pregnancy.

Conclusion

In conclusion, this case illustrates that even an uncomplicated pregnancy can harbor significant adnexal pathology. It reinforces the importance of considering ovarian masses in prenatal evaluation and highlights that removal of unexpected cysts at delivery is essential. Thus, a routine inspection of the adnexal structures is valuable in diagnosing adnexal pathology that may not be readily visualized by prenatal ultrasound especially in the late second trimester and third trimester pregnancy.

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Conflict of Interest

None

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Informed Consent

Informed written consent was obtained from the patient for the publication of this case report and accompanying images.

Author Contribution

Concept, design, planning: SSK, SS, JA, IK, GP; Literature review: SS, IK; Data collection: N/A; Data analysis: N/A; Draft manuscript: SSK, SS, IK, GP; Revision of draft: SSK, SS, IK, GP; Final manuscript: SSK, SS, JA, IK, GP; Accountability of the work: SSK, SS, JA, IK, GP; Guarantor: SSK.

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