



Body Stalk Anomaly in a 24-Week Singleton Pregnancy: Prenatal Sonographic Diagnosis and Differentiation from OEIS Complex and Pentalogy of Cantrell - A Case Report

Edvans Henry^{1*}, Abarham Martadiansyah², Nuswil Bernolian³

^{1,2,3} Department of Obstetrics and Gynecology, Faculty of Medicine, Sriwijaya University, Palembang, Indonesia.

*Corresponding Author: edvanshenry90@gmail.com

Article History

Manuscript submitted:

27 May 2026

Manuscript revised:

29 June 2026

Accepted for publication:

02 July 2026

Manuscript published:

10 July 2026

Keywords

Body stalk anomaly;

Limb-body wall complex;

Abdominal wall defect;

Prenatal ultrasonography;

Congenital malformation.

Abstract

Body stalk anomaly (BSA), also known as the limb-body wall complex, is a rare and almost uniformly lethal fetal malformation characterized by a large anterior abdominal wall defect with visceral herniation, severe kyphoscoliosis, and an absent or markedly short umbilical cord. We report a 19-year-old woman, gravida 1, referred at 17–18 weeks with a presumptive diagnosis of gastroschisis and diaphragmatic hernia. Serial transabdominal ultrasonography at our maternal-fetal medicine unit demonstrated a wide anterior abdominal wall defect with total herniation of the liver, stomach, and bowel into a covering membrane, oligohydramnios at 20 weeks, scoliosis, and a short umbilical cord with the fetal trunk lying close to the placenta. These findings fulfilled the Van Allen diagnostic criteria for BSA and allowed differentiation from OEIS complex and pentalogy of Cantrell. The fetal karyotype was clinically presumed normal, and maternal serology was non-contributory. Given the lethal nature of the condition, the family received detailed counseling regarding the grave fetal prognosis, recurrence risk, and management options, including elective termination at a tertiary center. This report underscores the central role of systematic second-trimester sonography in diagnosing BSA, distinguishing it from other anterior abdominal wall defects with more favorable outcomes, and guiding parental counseling.

Copyright © 2026, The Author(s)

This is an open-access article under the CC BY-SA license



How to Cite: Henry, E., Martadiansyah, A., & Bernolian, N. (2026). Body Stalk Anomaly in a 24-Week Singleton Pregnancy: Prenatal Sonographic Diagnosis and Differentiation from OEIS Complex and Pentalogy of Cantrell - A Case Report. *Media of Health Research*, 4(3), 601-609. <https://doi.org/10.70716/mohr.v4i3.605>

Introduction

Congenital anterior abdominal wall defects comprise a clinically and prognostically heterogeneous group of malformations whose accurate prenatal characterization carries major implications for parental counseling and pregnancy management. Among them, body stalk anomaly

(BSA), also known as the limb-body wall complex, is the most severe and almost invariably lethal entity. It is defined by a large anterior body wall defect with herniation of thoracic and/or abdominal viscera, severe kyphoscoliosis, limb deformities, and an absent or markedly short umbilical cord, with the fetal body frequently adherent to the placenta (Bianchi, Crombleholme, D'Alton, & Malone, 2014; Van Allen, Curry, & Gallagher, 1987).

BSA is exceedingly rare. Early reports from a Scottish population estimated an incidence of 1 in 14,000-42,000 pregnancies, whereas a multicenter study at 10–14 weeks of gestation reported a prevalence of approximately 1 in 7,500 fetuses (Daskalakis, Sebire, Jurkovic, Snijders, & Nicolaides, 1997; Smrcek et al., 2003). Because most affected fetuses die in utero, the incidence at birth is lower still, on the order of 0.32 per 100,000 births (Routhu, Thakkallapelli, Mohan, & Ahmed, 2016; Singh, Singh, & Gupta, 2017). The condition is generally sporadic, affects both sexes, and is typically associated with a normal karyotype, although increased maternal serum alpha-fetoprotein and nuchal translucency may be observed (Kocherla, Kumari, & Kocherla, 2015; Van Allen et al., 1987).

The principal diagnostic challenge lies in distinguishing BSA from other anterior abdominal wall defects that carry substantially more favorable outcomes, such as isolated gastroschisis and omphalocele, as well as from related polymalformative syndromes including the OEIS complex (omphalocele, exstrophy of the bladder, imperforate anus, spinal defects) and pentalogy of Cantrell (Pakdaman, Woodward, & Kennedy, 2015). Reliable differentiation rests on systematic sonographic assessment of the abdominal wall defect, the umbilical cord, the spine, and associated anomalies. We report a case of BSA diagnosed by serial second-trimester ultrasonography, with emphasis on the sonographic features that permitted its diagnosis and its differentiation from clinically important mimics.

Materials and Methods

This study was conducted as a descriptive case report following CARE reporting recommendations. The subject was a 19-year-old primigravida referred to the Maternal-Fetal Medicine Unit of Dr. Mohammad Hoesin General Hospital with a preliminary diagnosis of gastroschisis and diaphragmatic hernia.

Data collection included maternal history, physical examination, laboratory investigations, and serial transabdominal ultrasonography. Fetal biometric measurements, amniotic fluid volume, abdominal wall anatomy, placental relationship, and umbilical cord characteristics were evaluated during serial examinations.

Differential diagnosis was established by comparing sonographic findings with recognized diagnostic criteria for body stalk anomaly, OEIS complex, pentalogy of Cantrell, gastroschisis, and omphalocele (Pakdaman et al., 2015; Van Allen et al., 1987).

The patient received multidisciplinary counseling regarding fetal prognosis, pregnancy management options, and recurrence risk.

Results and Discussions

Case Presentation

A 19-year-old woman, gravida 1 para 0, was referred to our maternal-fetal medicine outpatient clinic at an estimated 17–18 weeks of gestation with a presumptive diagnosis of fetal gastroschisis and diaphragmatic hernia. Her last menstrual period dated the pregnancy, and fetal movements were perceived. She reported no abdominal pain, vaginal bleeding, nausea, or vomiting, and denied any history of trauma, abdominal massage, or the use of medication or traditional herbal preparations. There was no personal or family history of hypertension, diabetes mellitus, or congenital anomalies.

She had attended routine antenatal care at a primary health center, and her socioeconomic and nutritional status was adequate.

On general examination, she was alert and hemodynamically stable, with a blood pressure of 120/80 mmHg, pulse 88 beats/min, respiratory rate 20 breaths/min, and temperature 36.6°C. Her body weight was 50 kg, height 151 cm, and mid-upper arm circumference 22 cm. Cardiorespiratory and general systemic examinations were unremarkable. Obstetric examination revealed a fundal height two fingerbreadths above the umbilicus (approximately 23 cm), a positive external ballottement, no uterine contractions, and a fetal heart rate of 140 beats/min. Speculum and vaginal examinations were not performed.

Laboratory investigations

Initial complete blood count showed mild anemia with hemoglobin 11.1 g/dL, hematocrit 33%, and a microcytic index (MCV 83.3 fL), with a normal leukocyte and platelet count. A follow-up count one month later was comparable (hemoglobin 10.7 g/dL). Random blood glucose was 63 mg/dL, ferritin 24.8 µg/L, and vitamin D-25-OH 18.5 ng/mL. Screening serology for syphilis (TPHA, VDRL) and HIV was non-reactive. The TORCH panel demonstrated reactive rubella and cytomegalovirus IgG with non-reactive IgM and non-reactive toxoplasma IgG/IgM, consistent with past immunity rather than acute infection. Urinalysis was within normal limits.

Prenatal ultrasonography

Serial transabdominal sonography was performed at our fetomaternal unit. At an estimated 20 weeks of gestation, a single live intrauterine fetus was demonstrated with biometry corresponding to approximately 21 weeks. The placenta was located in the anterior corpus. There was reduced amniotic fluid (deepest vertical pocket 1.57 cm) consistent with oligohydramnios. A wide anterior abdominal wall defect measuring approximately 1.97 cm was identified, with total herniation of the liver, stomach, and bowel through the defect; the urinary bladder appeared normal (Figure 1).



Figure 1. Transabdominal ultrasonography demonstrating a wide anterior abdominal wall defect (DEFEK) with herniated bowel (GUT) and a short umbilical segment (UMB) adjacent to the defect; color Doppler delineates the umbilical vessels.

Coronal and parasagittal views confirmed a large complex mass of extruded viscera - including the stomach, liver, and bowel loops - covered by a membrane and lying immediately adjacent to the placenta (Figure 2). The findings were initially reported as a giant gastroschisis on the first examination.

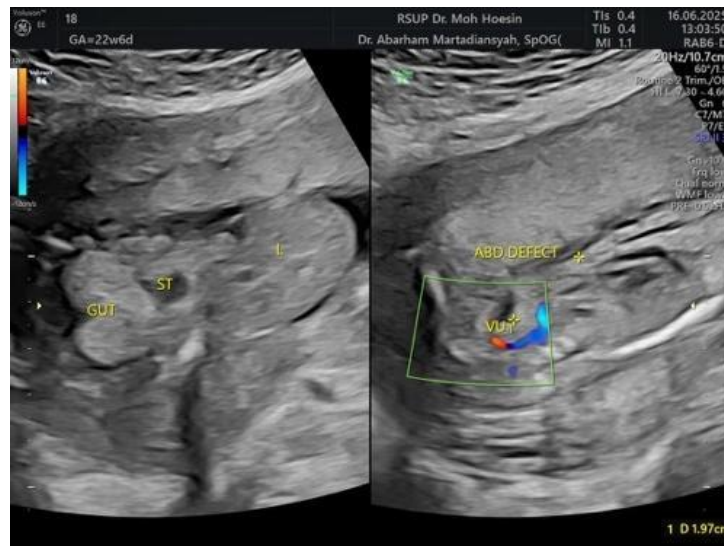


Figure 2. Ultrasonography showing the abdominal wall defect (ABD DEFECT) with herniation of the stomach (ST), liver (L), and bowel (GUT) into a covering membrane; the umbilical vessels (V) are short and run directly toward the placenta.

On repeat evaluation at 24 weeks (biometry corresponding to 24 weeks 6 days), the fetus remained alive and intrauterine. Biparietal diameter was 5.71 cm, head circumference 21.37 cm, femur length 4.02 cm, and transcerebellar diameter 2.81 cm. Amniotic fluid had normalized (deepest pocket 4.22 cm). Color Doppler interrogation confirmed a short umbilical cord with the fetal body lying close to the placenta, together with an omphalocele-like anterior defect and scoliosis (Figure 3). The constellation of a large abdominal wall defect, scoliosis, and a short cord with placental adherence was interpreted as a suspected body stalk anomaly.

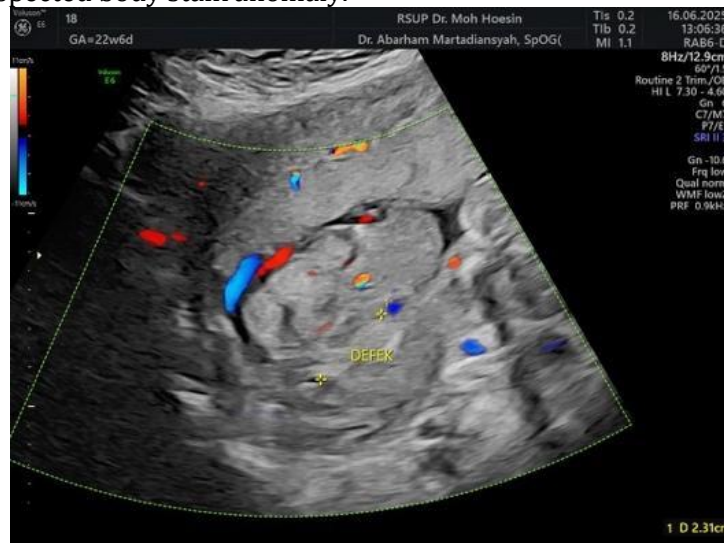


Figure 3. Color Doppler ultrasonography confirming a short umbilical cord coursing directly between the fetal abdominal defect (DEFEK) and the placenta, a sonographic hallmark of body stalk anomaly.

Working diagnosis, management, and prognosis

Integrating the clinical and sonographic findings, a working diagnosis of a singleton 24-week intrauterine pregnancy with a live fetus affected by body stalk anomaly was established. Supportive

antenatal management was provided, including folic acid 200 µg once daily, calcium carbonate 500 mg three times daily, and ferrous sulfate one tablet daily, with planned monthly follow-up and serial fetomaternal sonography. Given the lethal nature of the malformation, the family received structured counseling regarding the grave fetal prognosis, the low recurrence risk, the maternal risks of continuing the pregnancy, and the option of elective termination at a tertiary center with a delivery method chosen to minimize maternal morbidity. The maternal prognosis was considered guarded (dubia) and the fetal prognosis poor (dubia ad malam).

Discussion

Body stalk anomaly is a sporadic, almost uniformly fatal disruption of the embryonic body wall. Its pathogenesis remains incompletely understood, but two principal hypotheses are advanced. The exogenic (early amnion rupture) theory proposes that amniotic bands disrupt early embryogenesis and tether the embryo outside the amniotic cavity, whereas the endogenic (vascular disruption) theory attributes the defect to impaired early embryonic blood supply with consequent failure of normal morphogenesis (Smrcek et al., 2003; Van Allen et al., 1987). Both mechanisms culminate in failure of closure of the ventral body wall during the folding of the trilaminar embryo in the first four weeks of development, producing the characteristic phenotype of abdominoschisis with visceral extrusion, kyphoscoliosis, limb deformity, and a short or absent umbilical cord (Colpaert et al., 2000; Smrcek et al., 2003).

Sonographic diagnosis and the role of the umbilical cord

BSA can be diagnosed by ultrasonography as early as 10–14 weeks, and the Van Allen criteria require at least two of three features: exencephaly/encephalocele with facial clefts; thoraco- and/or abdominoschisis (a midline defect); and limb defects (Daskalakis et al., 1997; Singh et al., 2017; Van Allen et al., 1987). In the present case, the large abdominoschisis with visceral herniation, the severe scoliosis, and the strikingly short umbilical cord with the fetal trunk adherent to the placenta together satisfied the diagnostic threshold. The umbilical cord is the single most discriminating sonographic feature: in omphalocele, gastroschisis, OEIS complex, and pentalogy of Cantrell, a normal, free-floating cord can be demonstrated within the amniotic cavity, whereas in BSA, a normal free-floating cord cannot be identified (Nagase et al., 2021; Pakdaman et al., 2015). Three-dimensional sonography and color Doppler increase diagnostic accuracy by clarifying the cord and the fetal–placental relationship (Revels et al., 2020; Singh et al., 2017).

Differential diagnosis

The differential diagnosis of a fetal anterior abdominal wall defect includes amniotic band syndrome, gastroschisis, omphalocele, the OEIS complex, and pentalogy of Cantrell (Pakdaman et al., 2015; Routhu et al., 2016). Omphalocele is a midline, membrane-covered defect with herniation of the liver and bowel through the umbilical ring. In contrast, gastroschisis is typically a right paraumbilical defect with free-floating, uncovered bowel loops. The OEIS complex combines an infraumbilical midline defect, bladder exstrophy, imperforate anus, and spinal dysraphism, and major and minor sonographic criteria support the diagnosis, often confirmed with fetal magnetic resonance imaging (Mallmann et al., 2014; Revels et al., 2020). Pentalogy of Cantrell is characterized by a supraumbilical midline defect together with lower sternal, anterior diaphragmatic, pericardial, and intracardiac defects, frequently with ectopia cordis (Sana & Rentea, 2023; Williams, Marayati, & Beierle, 2019). A structured comparison of the cardinal features used to distinguish these entities is summarized in Table 1.

Table 1. Comparison of cardinal features distinguishing OEIS complex, body stalk anomaly, and pentalogy of Cantrell.

Feature	OEIS complex	Body stalk anomaly	Pentalogy of Cantrell
Midline abdominal wall defect	Present	Present	Present (supraumbilical)
Abdominoschisis / large defect	Present	Present	Present
Neural tube / spinal defect	Common	Common	Rare
Severe kyphoscoliosis	Variable	Characteristic	Uncommon
Limb anomalies	Common	Common	Rare
Short/absent umbilical cord	Low cord insertion	Characteristic	Normal cord
Free-floating normal cord	Detectable	Not detectable	Detectable
Cardiac/diaphragmatic defect	Rare	Variable	Diagnostic
Ectopia cordis	Absent	Occasional	Diagnostic
Bladder exstrophy / imperforate anus	Diagnostic	Occasional	Absent
Fetal-placental attachment	Absent	Present	Absent
Karyotype	Usually normal	Usually normal	May associate with trisomy 13/18
Prognosis	Poor / variable	Lethal	Poor/lethal

Etiology, risk factors, and genetics

The precise etiology of BSA is unknown. Reported associations include early amnion rupture, vascular compromise, and embryonic dysgenesis, as well as maternal exposures such as cocaine, tobacco, and cannabis, which may impair placental perfusion during a critical developmental window (Jidha, Wakjira, & Mekonnen, 2020; Routhu et al., 2016; Smrcek et al., 2003). The karyotype is usually normal; only isolated reports have described chromosomal abnormalities, such as uniparental disomy of chromosome 16 (Nagase et al., 2021). Although the condition is predominantly sporadic with a low recurrence risk, rare familial cases have been reported, warranting genetic counseling for affected families (Bergman et al., 2023; Colpaert et al., 2000; Singh et al., 2017). In the present case, no specific teratogenic exposure or familial predisposition was identified.

Prognosis and management

BSA is considered incompatible with extrauterine life and almost always results in spontaneous abortion or stillbirth; long-term survival is exceptional and has been reported only anecdotally after neonatal surgical closure (Lazaroni et al., 2016; Smrcek et al., 2003). For the mother, continuation of the pregnancy may increase the risk of preterm labor and gestational hypertension, and the fixed fetal position predisposes to malpresentation, obstructed labor, and birth-canal injury (Nagase et al., 2021; Singh et al., 2017; Smrcek et al., 2003). Because of the lethal fetal prognosis, the elevated maternal risk, and the low recurrence rate, early diagnosis is essential to enable timely, informed counseling, and elective termination at a tertiary center with a delivery method selected to minimize maternal morbidity is a reasonable option (Nagase et al., 2021; Singh et al., 2017). When the pregnancy is continued, folic acid supplementation and close maternal-fetal surveillance are advised (Singh et al., 2017). These principles guided the multidisciplinary counseling offered to our patient and her family.

Strengths and limitations

The strength of this report lies in its serial sonographic documentation, which captured the evolution of the findings from an initial impression of giant gastroschisis to a confident diagnosis of BSA once the short, placentally adherent umbilical cord and scoliosis were recognized. The main limitation is the absence of postnatal or post-mortem confirmation and karyotyping at the time of reporting, reflecting the constraints of real-world clinical practice. Nonetheless, the case reinforces a clinically important lesson: a fetal abdominal wall defect should not be assumed to be an isolated, prognostically favorable lesion until the umbilical cord, spine, and associated structures have been systematically evaluated.

Conclusion

Body stalk anomaly is a rare, lethal disruption of the fetal body wall whose prenatal recognition depends on the systematic sonographic demonstration of a large abdominal wall defect with visceral herniation, severe kyphoscoliosis, and an absent or short umbilical cord with the fetal trunk adherent to the placenta, in keeping with the Van Allen criteria. Careful evaluation of the umbilical cord is decisive in differentiating BSA from gastroschisis, omphalocele, the OEIS complex, and pentalogy of Cantrell, which carry more favorable outcomes. Early and accurate diagnosis allows clinicians to provide families with realistic prognostic information and genetic counseling and to plan a delivery approach that minimizes maternal morbidity. Health promotion, prenatal screening, and genetic counseling remain central to the management of these severe congenital malformations.

Acknowledgments

The authors thank the staff of the Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Dr. Mohammad Hoesin General Hospital, and Faculty of Medicine, Universitas Sriwijaya, for their assistance. Written informed consent was obtained from the patient for the publication of this case report and the accompanying images. The authors declare no conflicts of interest and received no specific funding for this work.

References

- Bergman, J. E. H., Barišić, I., Addor, M. C., Braz, P., Caverro-Carbonell, C., Draper, E. S., Garne, E. (2023). *Amniotic band syndrome and limb-body wall complex in Europe, 1980–2019. American Journal of Medical Genetics Part A*, 191(4), 995–1006. <https://doi.org/10.1002/ajmg.a.63107>
- Bianchi, D. W., Crombleholme, T. M., D'Alton, M. E., & Malone, F. D. (Eds.). (2014). *Fetology: Diagnosis and management of the fetal patient* (2nd ed.). New York, NY: McGraw-Hill.
- Colpaert, C., Bogers, J., Hertveldt, K., Loquet, P., Dumon, J., & Willems, P. (2000). Limb-body wall complex: Four new cases illustrating the importance of examining placenta and umbilical cord. *Pathology Research and Practice*, 196(11), 783–790. [https://doi.org/10.1016/S0344-0338\(00\)80114-2](https://doi.org/10.1016/S0344-0338(00)80114-2)
- Cunningham, F. G., Leveno, K. J., Bloom, S. L., Dashe, J. S., Hoffman, B. L., Casey, B. M., & Spong, C. Y. (2018). *Williams Obstetrics* (25th ed.). New York, NY: McGraw-Hill Education.
- Daskalakis, G., Sebire, N. J., Jurkovic, D., Snijders, R. J. M., & Nicolaides, K. H. (1997). Body stalk anomaly at 10–14 weeks of gestation. *Ultrasound in Obstetrics & Gynecology*, 10(6), 416–418. <https://doi.org/10.1046/j.1469-0705.1997.10060416.x>
- Espinosa-García, E., & Martínez-Córdoba, N. (2021). OEIS complex (omphalocele-exstrophy-imperforate anus-spinal defects): A confusing syndrome. Case report. *Case Reports*, 7(1), 41–49. <https://doi.org/10.15446/cr.v7n1.86862>
- Gică, N., Apostol, L., Hulață, I., et al. (2024). Body stalk anomaly. *Diagnostics*, 14(5), 518. <https://doi.org/10.3390/diagnostics14050518>

- Jidha, T. D., Wakjira, T., & Mekonnen, T. (2020). Body stalk anomaly presenting as an emergency in Ethiopia: A case report. *Journal of Medical Case Reports*, 14(1), 189. <https://doi.org/10.1186/s13256-020-02516-4>
- Juusela, A., & Gimovsky, M. L. (2021). When ultrasonography reveals a fetal abdominal wall defect. *OBG Management*, 33(1), 22-31. <https://doi.org/10.12788/OBGM.0058>
- Karami, M., Jenabi, E., & Fereidooni, B. (2017). Placenta previa after prior abortion: A meta-analysis. *Biomedical Research and Therapy*, 4(7), 1441-1450. <https://doi.org/10.15419/bmrat.v4i07.225>
- Kocherla, K., Kumari, V., & Kocherla, P. R. (2015). Prenatal diagnosis of body stalk complex: A rare entity and review of literature. *Indian Journal of Radiology and Imaging*, 25(1), 67-70. <https://doi.org/10.4103/0971-3026.150148>
- Lazaroni, T. L. D. N., Cruzeiro, P. C. F., Piçarro, C., Victoria, Á. M., Botelho Filho, F. M., & Tatsuo, E. S. (2016). Body stalk anomaly: Three months of survival. Case report and literature review. *Journal of Pediatric Surgery Case Reports*, 14, 22-25. <https://doi.org/10.1016/j.epsc.2016.08.004>
- Mallmann, M. R., Reutter, H., Mack-Detlefsen, B., Müller, A. M., Geipel, A., & Berg, C. (2014). Early prenatal diagnosis of the OEIS complex with different appearance in early compared with late pregnancy before spontaneous rupture of the cloacal membrane. *Prenatal Diagnosis*, 34(8), 803-805. <https://doi.org/10.1002/pd.4355>
- Nagase, H., Ohyama, M., Yamamoto, M., Kojima, Y., Nakajima, K., & Hara, M. (2021). Prenatal ultrasonographic findings and fetal/neonatal outcomes of body stalk anomaly. *Congenital Anomalies*, 61(4), 118-126. <https://doi.org/10.1111/cga.12412>
- Narayan, R., Meena, A., Sarkar, R., & Sharma, S. (2024). A rare case report of limb body wall complex. *Cureus*, 16(4), e59026. <https://doi.org/10.7759/cureus.59026>
- Pakdaman, R., Woodward, P. J., & Kennedy, A. (2015). Complex abdominal wall defects: Appearances at prenatal imaging. *RadioGraphics*, 35(2), 636-649. <https://doi.org/10.1148/rg.352140104>
- Peng, W., Li, L., Yang, R., Xie, H., & Lan, Y. (2025). Prenatal ultrasound diagnosis of pentalogy of Cantrell: A case report. *Medicine*, 104(32), e43674. <https://doi.org/10.1097/MD.00000000000043674>
- Revels, J. W., Wang, S. S., Nasrullah, A., Revzin, M., Murphy, A., & Khurana, A. (2020). An algorithmic approach to complex fetal abdominal wall defects. *American Journal of Roentgenology*, 214(1), 218-231. <https://doi.org/10.2214/AJR.19.21627>
- Routhu, M., Thakkallapelli, S., Mohan, P., & Ahmed, N. (2016). Role of ultrasound in body stalk anomaly and amniotic band syndrome. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 5(3), 641-647. <https://doi.org/10.18203/2320-1770.ijrcog20160551>
- Sana, M. K., & Rentea, R. M. (2023). *Pentalogy of Cantrell*. In *StatPearls*. Treasure Island, FL: StatPearls Publishing. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK558948>
- Singh, A., Singh, J., & Gupta, K. (2017). Body stalk anomaly: Antenatal sonographic diagnosis of this rare entity with review of literature. *Journal of Ultrasonography*, 17(69), 133-135. <https://doi.org/10.15557/JoU.2017.0020>
- Smrcek, J. M., Germer, U., Krokowski, M., Berg, C., Krapp, M., & Geipel, A. (2003). Prenatal ultrasound diagnosis and management of body stalk anomaly: Analysis of nine singleton and two multiple pregnancies. *Ultrasound in Obstetrics & Gynecology*, 21(4), 322-328. <https://doi.org/10.1002/uog.84>
- Van Allen, M. I., Curry, C., & Gallagher, L. (1987). Limb-body wall complex: I. Pathogenesis. *American Journal of Medical Genetics*, 28(3), 529-548. <https://doi.org/10.1002/ajmg.1320280302>
- Williams, A. P., Marayati, R., & Beierle, E. A. (2019). Pentalogy of Cantrell. *Seminars in Pediatric Surgery*, 28(2), 106-110. <https://doi.org/10.1053/j.sempedsurg.2019.04.006>

- Yang, Y., Wang, H., Wang, Z., Pan, X., & Chen, Y. (2020). First trimester diagnosis of body stalk anomaly complicated by ectopia cordis. *Journal of International Medical Research*, 48(12), 300060520974202. <https://doi.org/10.1177/0300060520974202>
- Yunitra, I., & Yusrawati, Y. (2024). Diagnosis and management of body stalk anomaly. *Diponegoro Medical Journal (Jurnal Kedokteran Diponegoro)*, 13(2), 90-95. <https://doi.org/10.14710/dmj.v13i2.41097>