

Research Article

The Twisted Ovary in Infancy and Childhood - A Therapeutic Dilemma

Aniruddha D Bhagwat^{1,2,3*}, Pradnya S Bendre², Ashlesha Shimpi³ and Pranav Jadhav³

¹Former Consultant Pediatric surgeon, Fortis Hiranandani Hospital, New Bombay, India

²B.J.Wadia Hospital for Children, Parel, Mumbai, India

³Dr. D.Y.Patil Medical College, Hospital and Medical Research Centre, PCMC, Pune, affiliated to Dr. D.Y.Patil Vidyapeeth Deemed to be University, Pune, India

Introduction

Ovarian torsion is a rare gynecological emergency. The ovary twists on its ligamentous support, obstructing blood supply to the organ [1]. Simple ovarian cysts are common. True ovarian neoplasms are rare. A variety of treatment options are available like pre-natal or post-natal cyst aspiration, observation and surgery [2].

Materials and Methods

Data collected on children diagnosed with torsion of ovarian cysts over a span of 4 years was compiled from multiple hospitals and reviewed. Case files were studied for presentation, investigations and management and outcome. The diagnosis was made by imaging antenatal and post-natal ultrasound, MRI and color doppler. The patients underwent either Laparoscopic or open surgery and depending on the operative findings, either ovarian cystectomy, or oophorectomy, or fenestration and oophoropexy were performed. Patients were followed up at 3 mo, 6 mo and 1 year. Three cases of ovarian malignancy, and one case of corpus luteal cyst (all without torsion) were excluded from this study. (Figures 1 & 2).

Results

The first case was a five-day-old baby girl, born to a diabetic mother, diagnosed in a third trimester antenatal ultrasound scan as

***Corresponding author:** Aniruddha D Bhagwat, Department of Paediatric Surgery, Dr. D.Y. Patil Medical College, Hospital and Medical Research Centre, PCMC, Pune, affiliated to Dr. D.Y.Patil Vidyapeeth Deemed to be University, Pune 411018, India, Email: aniruddha.bhagwat@dpu.edu.in

Citation: Bhagwat AD, Bendre PS, Shimpi A, Jadhav P (2022) The Twisted Ovary in Infancy and Childhood - A Therapeutic Dilemma. J Neonatol Clin Pediatr 9: 097.

Received: October 07, 2022; **Accepted:** November 03, 2022; **Published:** November 10, 2022

Copyright: © 2022 Bhagwat AD, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

having a right ovarian cyst. There was no maternal polyhydramnios. The baby was asymptomatic at birth. Clinical examination revealed a non-tender mobile, palpable mass. A post-natal ultrasound confirmed the presence of a large right ovarian cyst extending up to the inferior surface of liver. The cyst was containing fluid and debris. A large brown colored ovarian cyst was confirmed during Laparoscopy. It had undergone a 270 degree rotation on its pedicle. The cyst was aspirated and delivered out of abdominal port site, untwisted and ovarian cystectomy was performed. Viable ovarian parenchyma was sutured and returned to the abdomen. Follow up ultrasound at 3 months, and 1 year showed a viable ovary on both the sides.

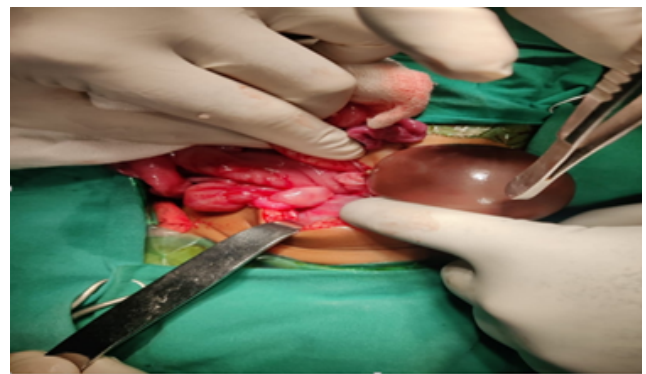


Figure 1: Left ovarian cyst torsion in a 3-month-old.



Figure 2: Excised specimen of twisted left ovarian cyst in the same patient.

The second case was a twelve year old pubertal girl with pain in left side of abdomen and vomiting. Ultrasound showed a large left sided ovarian cyst with equivocal blood flow on color doppler. The girl underwent Laparoscopy and a congested, dusky, twisted left ovary was found. The ovary was successfully de-twisted and return of color and reduction of congestion was well appreciated. The ovary was fixed after fenestrating the cyst and de-twisting. Post op ultrasound done at 3 months revealed a viable ovary with functional cysts.

The third case was a 3 month old female who was diagnosed to have a? Ovarian? Mesenteric? Enteric duplication cyst on antenatal third trimester ultrasound. The baby was asymptomatic at birth. An MRI scan was performed which revealed a normal ovary on right side and a 5 cm sized cyst in right para-colic gutter? Mesenteric? Enteric duplication cyst. The infant was followed up. The cyst showed no signs of regression and in fact increased marginally in size at 3 months follow up. Serum AFP and beta HCG were normal for age. The child underwent a mini open laparotomy and a large left ovarian cyst was found, sitting in the right flank, twisted multiple times on its Salpinx and ligaments. The cyst was de-rotated. The cyst aspirate was hemorrhagic in color. As there was neither any discernible ovarian parenchyma identifiable, nor any pulsatile blood flow through the pedicle, and no bleeding from the cut edges, a salpingo- oophorectomy was performed on the left side. The right ovary and uterus were normal.

Discussion

The vast majority of ovarian cysts are follicular in origin. 60% of newborn ovaries demonstrate mature ovarian follicles. The normal newborn ovary has several anechoic cysts, 4-5 mm in diameter. Newborn cysts less than 2 cm in diameter are unlikely to cause problems.

FSH, LH, oestrogen and placental beta HCG all stimulate the ovarian follicle [3-5]. Infants born to diabetic mothers, Rh-iso-immunisation and pre-clampsia have higher circulating placental HCG, and are associated with a higher incidence of large ovarian cysts.

At birth beta HCG and oestrogen levels drop precipitously in the newborn. LH and FSH secretion by the hypothalamus and pituitary decreases by 4-6 months of age. Stimulation of ovarian follicle halts and simple ovarian cysts are known to involute spontaneously in 1-6 months [3,6]. Cysts more than 4-5 cm are at high risk of undergoing complications, notably torsion [3,7]. Complex, heterogeneous cysts occur more likely as a result of torsion. Cystadenomas, Teratomas, Germ cell tumors, granulosa cell tumors, ovarian carcinomas, endodermal sinus tumors are rare [3,8-10].

Simple cysts are completely anechoic with an imperceptible thin cyst wall. Complex cysts contain fluid and debris. They may be solid or multi-septate or heterogeneous. Hemorrhage, calcification, auto-amputation and free floating intra-abdominal cysts can occur. Complex cysts with fluid debris level is a hallmark of torsion.

44 to 70% antenatally diagnosed simple cysts convert to complex ones by the time of first post- natal ultrasound scan [10]. There is no co-relation between cyst size and risk of ovarian loss.

Radiological imaging including antenatal scans, ultrasound, color doppler and MRI scans are useful tools in diagnosis.

Management

The treatment remains controversial. Small, less than 4 cm simple ovarian cysts can be followed up for resolution. Large, more than 5 cm, complex ovarian cysts usually undergo torsion. In cases of torsion, initial de-torsion de-rotation is attempted. Every attempt is made to salvage and preserve the ovary. Despite ischemia, it is worthwhile to spare the ovary whenever possible. Some ovarian tissue may undergo atrophy but viable tissue will survive. The cyst can often be peeled off the surface of ovary using a moist pledget. Bleeding ovarian surface is cauterized and the edges of ovarian tissue may be approxi-

mated (not always necessary) obviously necrotic and gangrenous tissue has to be sacrificed. Complex cysts have undergone spontaneous resolution, but no viable ovarian tissue could be found on follow-up ultrasound scans in these cases. The twisted ovarian cyst is often removed for lack of identifiable ovarian tissue [4,8,10].

Some surgeons prefer to remove complex cysts to exclude malignancy [2,3,5,10]. Tumor markers AFP, beta HCG, are sent in all cases. Pre-operative blood samples can be stored in the refrigerator for tumor marker studies to make treatment more cost effective for the patient. MRI and CT scans need sedation and anesthesia in babies and small infants. Exposure to general anesthesia in under 2 year olds may be associated with an elevated risk of adverse neurodevelopment outcome (Table 1).

PROCEDURE	MERITS	RISK
Aspiration	Less invasive Ovary preserved	Torsion can follow simple aspiration Malignancy may be missed Mis-diagnosis e.g. enteric cyst Re-filling and re-do maybe required.
Observation & follow-up	Spontaneous Involution may occur	Torsion may occur Loss of ovary Intestinal obstruction
Ovary sparing surgery- Cystectomy, De-roofing, fenestration, oophoropexy.	A definitive diagnosis is obtained	Anesthesia and neurodevelopment delay risk. Risk of loss of ovary if ischemic ovary left behind Intestinal adhesions/ obstruction.
Surgery- oophorectomy	Tissue diagnosis is obtained	Anesthesia and neurodevelopment delay risk Loss of organ Intestinal adhesions/ obstruction

Table 1: Shows available therapeutic options, their merits and associated risks.

Conclusion

Newborn cysts less than 2 cm in diameter are unlikely to cause problems. Small cysts less than 4 cm in size may undergo spontaneous involution. 44 to 70% antenatally diagnosed simple cysts convert to complex ones by the time of first post-natal ultrasound scan. There is no co-relation between cyst size and risk of ovarian loss. Risk of malignancy remains, albeit rare. Different modalities of treatment are available and decision needs to be tailored as per individual patients circumstances with every effort made to spare the ovary. More studies are needed to examine future fertility potential in children who have been treated for ovarian cyst torsion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the legal guardian has given his/her consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil

Conflict of interest

Nil

References

1. Aljohani M, Aljahany M, Elbasheer SY, Abowadaan M, Kentab O, et al. (2021) Pre menarchal Adolescent Female Ovarian torsion: A case of delayed diagnosis. American journal of case reports 22: e932245.
2. Emmanuel S, Bargy F, Lewin F, Baron JM, Adamsbaum C, et al. (1991) Management of ovarian cyst detected by prenatal ultrasounds. European Journal of Paediatric surgery 4: 137-140.
3. Mary BL, Luks FL, Feliatrautt D, Garel L, Desjardins JG, et al. (1991) Surgical indications in antenatally diagnosed ovarian cysts. Journal of Paediatric Surgery 26: 276-282.
4. Ann BE, Laufer MR (2004) Foetal ovarian cysts: Incidence, Diagnosis and Management. Journal of Reproductive Medicine 49: 329-337.
5. Stephen DE (2000) Ovarian masses in the newborn. Seminars in Paediatric Surgery 9: 121-127.
6. Ali AM, Aikin L, Özbek S, Tireli G, Kavuncuoğlu S, et al. (2010) Foetal, neonatal ovarian cysts- Their monitoring and management. Retrospective evaluation of 20 cases and review of literature. Journal Clin Res Ped Endo 2: 28-33.
7. Israel M, Levy A, Katz M, Maresh AL, Glezerman M, et al. (1991) Foetal ovarian cysts: Prenatal ultrasonographic detection and post-natal evaluation and treatment. American Journal of Obstetric Gynaecology 164: 874-878.
8. Ada K, Nagar H, Graif M, Ben-Sira L, Miller E, et al. (2006) Percutaneous drainage as treating of choice for neonatal ovarian cysts. Paediatric Radiology 36: 954-958.
9. Jonathan CP, Billmire DF, Rescorla FJ, Finnell SME, et al. (2014) Management of neonatal ovarian cysts and its effect on ovarian preservation. Journal of Paediatric surgery 49: 990-994.
10. Newborn surgery 4th edition. Edited by Prem Puri. CRC Press.



- Advances In Industrial Biotechnology | ISSN: 2639-5665
- Advances In Microbiology Research | ISSN: 2689-694X
- Archives Of Surgery And Surgical Education | ISSN: 2689-3126
- Archives Of Urology
- Archives Of Zoological Studies | ISSN: 2640-7779
- Current Trends Medical And Biological Engineering
- International Journal Of Case Reports And Therapeutic Studies | ISSN: 2689-310X
- Journal Of Addiction & Addictive Disorders | ISSN: 2578-7276
- Journal Of Agronomy & Agricultural Science | ISSN: 2689-8292
- Journal Of AIDS Clinical Research & STDs | ISSN: 2572-7370
- Journal Of Alcoholism Drug Abuse & Substance Dependence | ISSN: 2572-9594
- Journal Of Allergy Disorders & Therapy | ISSN: 2470-749X
- Journal Of Alternative Complementary & Integrative Medicine | ISSN: 2470-7562
- Journal Of Alzheimers & Neurodegenerative Diseases | ISSN: 2572-9608
- Journal Of Anesthesia & Clinical Care | ISSN: 2378-8879
- Journal Of Angiology & Vascular Surgery | ISSN: 2572-7397
- Journal Of Animal Research & Veterinary Science | ISSN: 2639-3751
- Journal Of Aquaculture & Fisheries | ISSN: 2576-5523
- Journal Of Atmospheric & Earth Sciences | ISSN: 2689-8780
- Journal Of Biotech Research & Biochemistry
- Journal Of Brain & Neuroscience Research
- Journal Of Cancer Biology & Treatment | ISSN: 2470-7546
- Journal Of Cardiology Study & Research | ISSN: 2640-768X
- Journal Of Cell Biology & Cell Metabolism | ISSN: 2381-1943
- Journal Of Clinical Dermatology & Therapy | ISSN: 2378-8771
- Journal Of Clinical Immunology & Immunotherapy | ISSN: 2378-8844
- Journal Of Clinical Studies & Medical Case Reports | ISSN: 2378-8801
- Journal Of Community Medicine & Public Health Care | ISSN: 2381-1978
- Journal Of Cytology & Tissue Biology | ISSN: 2378-9107
- Journal Of Dairy Research & Technology | ISSN: 2688-9315
- Journal Of Dentistry Oral Health & Cosmesis | ISSN: 2473-6783
- Journal Of Diabetes & Metabolic Disorders | ISSN: 2381-201X
- Journal Of Emergency Medicine Trauma & Surgical Care | ISSN: 2378-8798
- Journal Of Environmental Science Current Research | ISSN: 2643-5020
- Journal Of Food Science & Nutrition | ISSN: 2470-1076
- Journal Of Forensic Legal & Investigative Sciences | ISSN: 2473-733X
- Journal Of Gastroenterology & Hepatology Research | ISSN: 2574-2566
- Journal Of Genetics & Genomic Sciences | ISSN: 2574-2485
- Journal Of Gerontology & Geriatric Medicine | ISSN: 2381-8662
- Journal Of Hematology Blood Transfusion & Disorders | ISSN: 2572-2999
- Journal Of Hospice & Palliative Medical Care
- Journal Of Human Endocrinology | ISSN: 2572-9640
- Journal Of Infectious & Non Infectious Diseases | ISSN: 2381-8654
- Journal Of Internal Medicine & Primary Healthcare | ISSN: 2574-2493
- Journal Of Light & Laser Current Trends
- Journal Of Medicine Study & Research | ISSN: 2639-5657
- Journal Of Modern Chemical Sciences
- Journal Of Nanotechnology Nanomedicine & Nanobiotechnology | ISSN: 2381-2044
- Journal Of Neonatology & Clinical Pediatrics | ISSN: 2378-878X
- Journal Of Nephrology & Renal Therapy | ISSN: 2473-7313
- Journal Of Non Invasive Vascular Investigation | ISSN: 2572-7400
- Journal Of Nuclear Medicine Radiology & Radiation Therapy | ISSN: 2572-7419
- Journal Of Obesity & Weight Loss | ISSN: 2473-7372
- Journal Of Ophthalmology & Clinical Research | ISSN: 2378-8887
- Journal Of Orthopedic Research & Physiotherapy | ISSN: 2381-2052
- Journal Of Otolaryngology Head & Neck Surgery | ISSN: 2573-010X
- Journal Of Pathology Clinical & Medical Research
- Journal Of Pharmacology Pharmaceutics & Pharmacovigilance | ISSN: 2639-5649
- Journal Of Physical Medicine Rehabilitation & Disabilities | ISSN: 2381-8670
- Journal Of Plant Science Current Research | ISSN: 2639-3743
- Journal Of Practical & Professional Nursing | ISSN: 2639-5681
- Journal Of Protein Research & Bioinformatics
- Journal Of Psychiatry Depression & Anxiety | ISSN: 2573-0150
- Journal Of Pulmonary Medicine & Respiratory Research | ISSN: 2573-0177
- Journal Of Reproductive Medicine Gynaecology & Obstetrics | ISSN: 2574-2574
- Journal Of Stem Cells Research Development & Therapy | ISSN: 2381-2060
- Journal Of Surgery Current Trends & Innovations | ISSN: 2578-7284
- Journal Of Toxicology Current Research | ISSN: 2639-3735
- Journal Of Translational Science And Research
- Journal Of Vaccines Research & Vaccination | ISSN: 2573-0193
- Journal Of Virology & Antivirals
- Sports Medicine And Injury Care Journal | ISSN: 2689-8829
- Trends In Anatomy & Physiology | ISSN: 2640-7752

Submit Your Manuscript: <https://www.heraldoopenaccess.us/submit-manuscript>