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Should the ovary always be conserved in torsion? A tertiary care institute experience

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ABSTRACT

Aim: The aim of this study was to analyze our experience in conserving ovarian tissue in cases of ovarian torsion, irrespective of grade of necrosis at exploration.
Materials and methods: All children with a diagnosis of ovarian torsion admitted to our hospital from January 2009 to January 2013 were included. Patients with underlying ovarian pathology were excluded.
Results: There were 13 torsions in 12 children (one bilateral). All underwent detorsion with or without evacuation of hematoma. Follow-up ultrasonography (USG) with color Doppler was done for all 13 ovaries, which showed an ovary with good vascularity and follicular development in 12 ovaries (92%). In 76% (10 of 13) of cases, intraoperatively, the ovary was judged to be moderately to severely ischemic/necrotic. Yet, follow-up sonograms showed the ovary with follicular development in all cases except one (7%). There were no major complications in our series.
Conclusion: Simple detorsion, instead of traditionally advocated oophorectomy, was not accompanied by an increase in morbidity. On follow-up, almost all patients studied had functioning ovarian tissue despite the grave ischemia observed intraoperatively. Detorsion should be the procedure of choice for all cases of simple ovarian torsion in children.

Torsion of ovary is a surgical emergency in prepubertal girls. It accounts for up to 2.7% of all cases with acute abdominal pain in children [1]. Clinical presentation of torsion of ovary masquerades as any acute abdomen surgical or otherwise. One must approach all prepubertal girls with an acute abdomen with a high degree of suspicion of torsion of ovary. The earlier recommended treatment of ovarian torsion was oophorectomy [2,3]. Recent reports, describe ovarian conservation with untwisting of the ischemic adnexa as a safe and successful procedure [4–6]. The arguments in favor of oophorectomy are: risk of missing an underlying malignancy, thromboembolism after detorsion and a belief that a grossly black hemorrhagic adnexa is irreversibly damaged [2–4]. Our primary aim was to analyze whether irreversible ovarian damage was inevitable or not with objective follow-up data following conservative management of ovarian torsion.

1. Materials and methods

All children with diagnosis of ovarian torsion admitted to our hospital from January 2009 to January 2013 were included. A plain radiograph of the abdomen and pelvis, and abdominal ultrasonography (USG) with Color Doppler were obtained. After USG, the patient was taken to the operating theater (OR) on an emergency basis and tumor markers were obtained in all patients as a protocol. Laboratory work was done according to an institutional protocol. Patients with underlying ovarian malignancy or cyst were excluded (i.e, a case of torsed gonadoblastoma was excluded). Laparoscopy was the initial mode of management followed by laparotomy if required. Data regarding patients' demographics, duration of symptoms, site of pain, atypical symptoms, investigations, complications, and length of stay were obtained. Also, time taken from presentation to hospital to surgery was tabulated. To reduce subjective operator bias, surgery was performed by designated staff members.

In addition, torsion of ovary was graded as follows:

Grade 1: Slightly discolored, normal size ovary, which promptly reverted to normal color after detorsion.

Grade 2: Dark red to brown, mildly enlarged ovary, which became hyperemic with multiple pin-point petechiae after detorsion.

Grade 3: Brown to black, grossly enlarged ovary with hematoma with slight improvement in color, small pin-point oozing after detorsion and hematoma evacuation.

Grade 4: Completely black, grossly enlarged ovary with hematoma and no improvement in color after detorsion and hematoma evacuation.

All ovaries underwent either simple detorsion or detorsion with evacuation of hematoma. None of the ovaries or contralateral ovaries

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were fixed. On follow up at 3 months, all girls were evaluated with USG and color Doppler. Data were analyzed.

2. Results

There were 13 torsions in 12 children with age ranging from 6 to 12 years (mean = 8.84). Pain (87%), nausea (56%), and vomiting (56%) were the most common presenting symptoms. Of these, one presented with constipation and mild abdominal pain and another with left flank pain. A palpable mass on presentation was noted in one girl. The time from onset of symptoms to hospital ranged from 14 to 54 hours (mean = 31 hours). The time lapse from presentation to hospital until surgery was 4–30 hours (mean = 10 hours).

Diagnostic USG with color Doppler was done in all patients, which showed ovarian torsion with decreased vascularity in all and ovarian enlargement with hemorrhagic collection in 10 ovaries (70%). The diameter of ovary measured by USG averaged 5.1 cm (range 3.9–12 cm). In one patient with constipation and mild abdominal pain, initial USG missed the torsion. Review USG for persistent pain showed torsion. The torsion was right-sided in 46% and left sided in 54%. Laparoscopy was performed in 84% of patients; 28% cases required conversion to an open procedure, laparotomy was primarily done in a single patient and another presented as an incarcerated right inguinal hernia and required open herniotomy.

Using the aforementioned grading system for ovarian ischemia, the following results were obtained: 3 of 13 (24%) ovaries were graded as grade 2 ischemic (Fig. 1) and, 5 of 13 (38%) as grade 3 (Fig. 2). Grade 4 ischemia was present in 5 (38%) ovaries (Fig. 3A). Three patients underwent simple detorsion while 10 (76%) required detorsion with evacuation of hematoma and unroofing of the cavity (Fig. 3B). Median postoperative stay was 72 hours (range 48–120 hours). One patient had postoperative ileus with low-grade fever, and one patient had ileus and wound infection (both were open laparotomies). Six patients had low-grade fever for a day or two postoperatively. All were managed conservatively.

Follow-up was available in all 12 patients (13 ovaries). All the patients were asymptomatic at 3 month follow-up. Repeated USG with color Doppler showed ovarian tissue with good vascularity and follicular development in 12 ovaries (92%) (Fig. 4A and B). However, in the child with bilateral asynchronous occurrence, left ovarian tissue was not identified on follow up USG. As noted almost 76% ovaries were initially labeled as having moderate to severe necrosis (grade 3 or 4), but of these 10 ovaries, 9 ovaries had ovarian tissue with good vascularity and with follicular development on follow up USG with color Doppler.

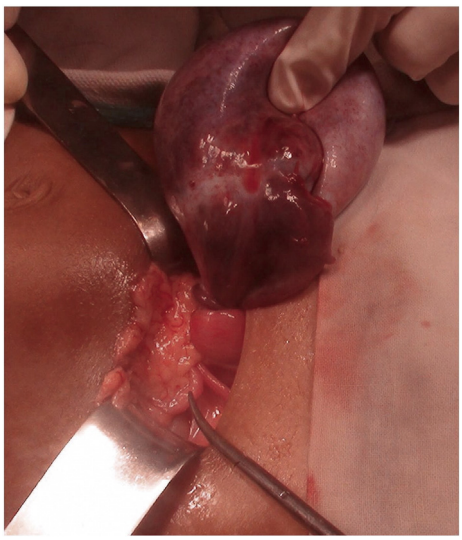

Fig. 1. Left ovarian torsion with Grade 2 ischemia.

Fig. 2. Right ovarian torsion (grade 3) presented as right sided strangulated inguinal hernia.

3. Discussion

Torsion of ovary is a surgical emergency. The usual presentation is lower abdominal pain, which may be indistinguishable from acute appendicitis when the pain is located in the right lower quadrant [7]. Nausea and vomiting, mild fever, and leucocytosis are associated features. The reported incidence of ovarian torsion is 2.7% in the general population. As differential diagnosis includes appendicitis, gastroenteritis and renal colic, diagnosis is frequently delayed. USG with color Doppler remains the most useful investigation.

Traditionally, the management of ovarian torsion was excision of the twisted ovary for fear of (1) embolic phenomenon on detorsion, (2) leaving a malignancy behind, and more importantly, (3) the belief that grossly black hemorrhagic ovary was irreversibly damaged [7–9].

Recent studies, however, advocate conservative management by detorsion as the treatment of choice in prepubertal girls. Oelsner et al.

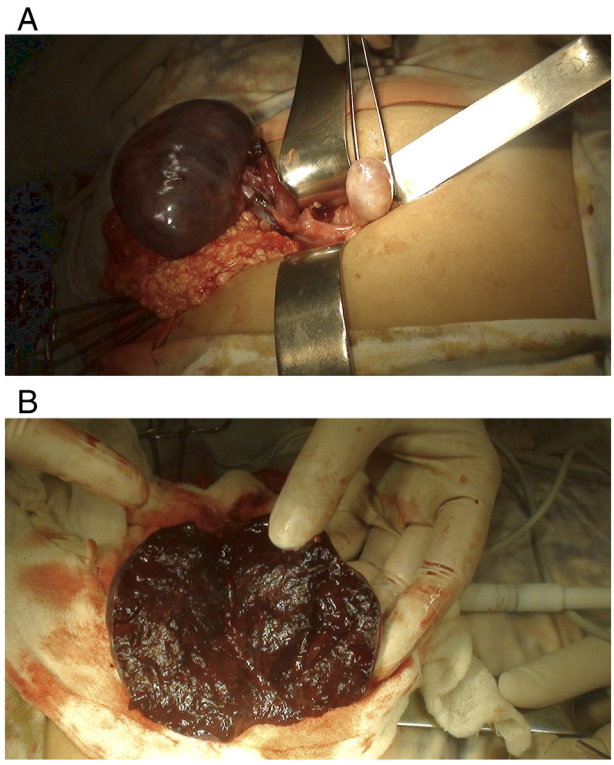

Fig. 3. A: Right ovarian torsion with Grade 4 ischemia. B: Same ovary as in Fig. 4A after evacuation of hematoma.