



The “cogwheel” sign of hydrosalpinx

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A cogwheel (Fig. 1) has been used to describe the appearance of a hydrosalpinx imaged in cross section, as seen on ultrasound (Fig. 2) [1]. Throughout the fallopian tube, there are longitudinal folds and mucosal rugae, that in concert with cilia, help transport an egg to the uterus and also help clear fluid from the fallopian tube into the peritoneal cavity [2]. If the fallopian tube becomes blocked, usually in the ampullary segment which constitutes half the length of the tube [2], fluid is not cleared and the fallopian tube becomes dilated and fluid-filled producing a hydrosalpinx [1]. When this occurs, the longitudinal folds of the fallopian tube can become thickened, and appear more pronounced at imaging, recalling the pronged teeth of a cogwheel and producing the pathognomonic “cogwheel” sign of hydrosalpinx, when the tube is imaged in cross section (Fig. 3a) [1].

The causes of a hydrosalpinx include adhesions from pelvic inflammatory disease, tubal ligation, endometriosis, tubal malignancy, prior tubal pregnancies, and hysterectomy without salpingo-oophorectomy [2–4]. Rarely, transient dilation of the fallopian tubes can occur without complete distal occlusion due to retrograde passage of blood from the uterus [3]. The thickened folds may be mistaken for mural nodules, but the elongated nature of the folds help distinguish them from a tubal neoplasm (Fig. 3b) [2].



Fig. 1 Cogwheels with their spokes along the outer rim. The inferior cogwheel, with its spokes radiating inward, is more typical of the “cogwheel sign.” Photograph by Lynn Della Grotta

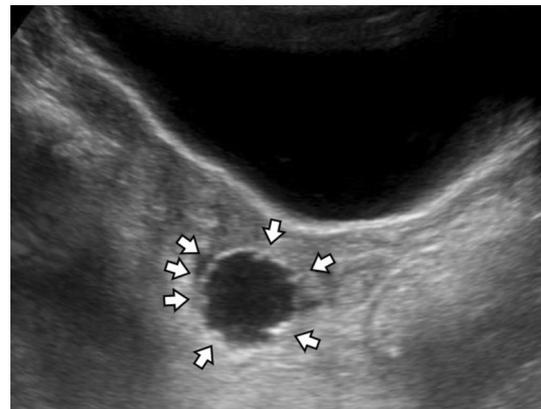


Fig. 2 Ultrasound image showing a left hydrosalpinx in cross section. The fallopian tube is fluid-filled with thickened folds along the periphery producing the “cogs” on the wheel (white arrows)

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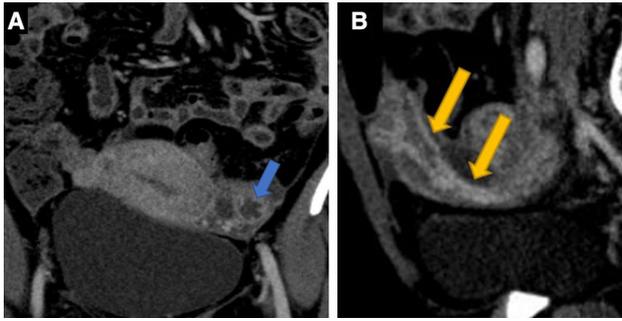


Fig. 3 **a** Coronal-enhanced CT image of the pelvis from another patient demonstrates a left hydrosalpinx with central fluid attenuation and thickened folds along the outer rim (blue arrows), producing the “cogwheel” sign. **b** A sagittal-enhanced CT image shows the elongated nature of the folds in the dilated tube to better advantage (yellow arrows)

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Research involving human and animal rights This article does not contain any studies with human participants or animals performed by any of the authors.

References

1. Rezvani M, Shaaban AM (2011) Fallopian tube disease in the nonpregnant patient. *Radiographics* 31:527-548
2. Kim MY, Rha SE, Oh SN, Jung SE, Lee YJ, Kim YS, et al (2009) MR imaging findings of hydrosalpinx: a comprehensive review. *Radiographics* 29:495-507
3. Benjaminov O, Atri M (2004) Sonography of the abnormal fallopian tube. *AJR* 183:737-742
4. Revzin M, Mathur M, Dave HB, Macer ML, Spektor M (2016) Pelvic inflammatory disease: multimodality imaging approach with clinical-pathologic correlation. *Radiographics* 36:1579-1596

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