

# Target sign: appendicitis

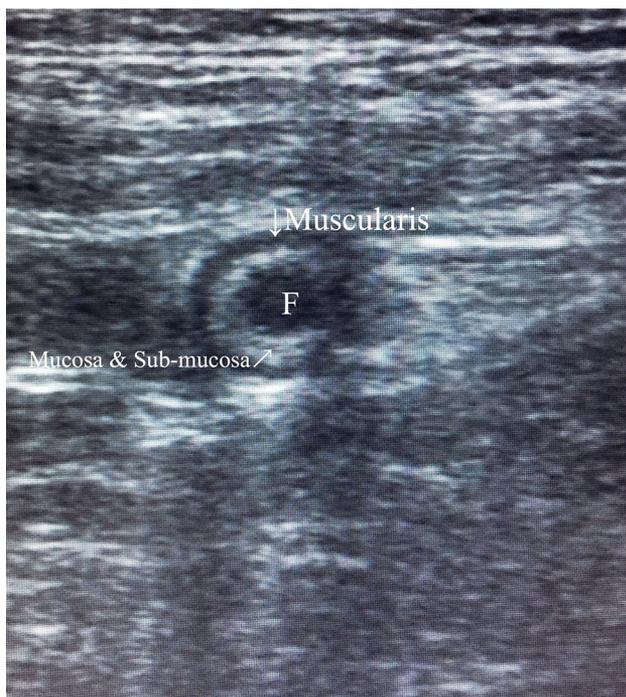
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“Target sign” of appendicitis is seen on axial sonographic images characterized by fluid-filled hypo-echoic center surrounded by an echogenic mucosa and submucosa and hypo-echoic muscularis as shown in Fig. 1. This sign is a specific variant of “the bowel wall target sign” which is associated with the bowel wall thickening of variable causes [1]. This sign attributes its name to the appearance of a Bull’s eye target as seen in Fig. 2. On longitudinal images, nonperforated, inflamed appendix

appears an elongated, fluid-filled, noncompressible, aperistaltic, blind ending tubular structure as seen in Fig. 3. The axial outer-to-outer wall diameter is more than 6 mm [2].

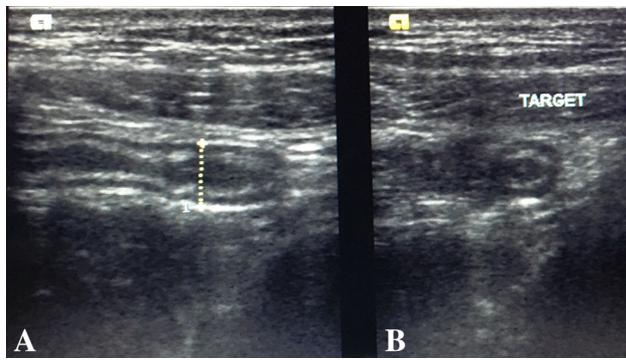
The other findings of appendicitis on sonography include an appendicolith, pericaecal, or periappendicular fluid; increased periappendicular echogenicity due to fat infiltration; and enlargement of mesenteric lymph nodes [3]. The US features of appendicular perforation include



**Fig. 1.** Axial US image showing the classic target sign of appendicitis [fluid-filled center (F) surrounded by an echogenic mucosa & submucosa and hypo-echoic muscularis].



**Fig. 2.** The image of a “bull’s eye target” to which the title “target sign” is attributed.



**Fig. 3.** (A) Longitudinal US image showing a blind-ended, tubular, and noncompressible, inflamed appendix with the corresponding image (B) showing its typical target appearance. The outer-to-outer diameter in this case was 7.5 mm.

loss of the echogenic submucosal layer and the presence of a loculated periappendicular fluid collection or abscess [2].

#### Compliance with ethical standards

**Funding Source** There is no funding source.

**Ethical approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from all individual participants included in the study.

**Conflict of interest** All authors declare that there is no conflict of interest.

#### References

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3. Mostbeck G, Adam EJ, Nielsen MB, et al. (2016) How to diagnose acute appendicitis: ultrasound first. *Insights Imaging* 7(2):255–263. <https://doi.org/10.1007/s13244-016-0469-6>