National Board of Examination - Journal of Medical Sciences
Volume 2, Issue 1, Pages 62–67, January 2024
DOI 10.61770/NBEJMS.2024.v02.i01.008

**CASE SERIES**

# "K-SIGN" in Retrocaecal Appendicitis – A Case Series

Foram Modh,[1] Rajeshkumar H. Majithiya[1], Jayshriben R Majithiya[2], Nihal Sabbirbhai Kugasia[3] and Bharatkumar M. Chaudhari[4,*]
[1]*Assistant Professor, Department of General Surgery, Banas Medical College and Research Institute, Palanpur, India*
[2]*Associate Professor, Department of Obstetrics and Gynaecology, Banas Medical College and Research Institute, Palanpur, India*
[3]*Junior Resident in Department of General Surgery, Banas Medical College and Research Institute, Palanpur, India*
[4]*Associate Professor, Department of Pathology, Banas Medical College and Research Institute, Palanpur. India*

Accepted: 18-December-2023 / Published Online: 4-January-2024

**Abstract**

**Background:** When someone has appendicitis, the symptoms can be different depending on where the appendix is located. When someone has retrocaecal appendicitis, their symptoms are different from those of classical appendicitis in which the appendix is in the usual place. K-Sign show that the back wall of the abdomen is soft in people with paracolic appendicitis. As a sign of respect, the K-Sign is called the "Kashmir Sign" after the place where it forms, Kashmir. When the inflamed appendix crosses above the iliac crest on the back wall of the abdomen, it's a sign. The soreness is caused by irritation of the peritoneum on the back wall of the abdomen. **Case Presentation:** A group of five patients were studied and a K-Sign was used to find tenderness on the back wall of the abdomen. The tenderness was found in a specific area bounded by the 12th rib above, the spine below, the side edge of the back wall below, and the iliac crest above. All 5 of the cases had pain in this place on the back wall of the abdomen. They all wanted to have an appendectomy and had a report from a histopathological test that showed their appendix was inflamed. **Conclusion:** The K-Sign was looked at in a swollen appendix that was retrocephalic and paracolic. The K-Sign is important because it's hard to diagnose retrocaecal appendicitis and it can lead to other problems.

**Key words**: K-Sign, appendicitis, appendix

*Corresponding author: Bharatkumar M. Chaudhari
Email: bharatbmc79@gmail.com

**Background**

The retrocaecal appendix shows up in 70–80% of different appendix positions, and retrocaecal appendicitis can show up in some unusual ways with certain symptoms [1,2]. There may not be enough inflammation to cause pain in the right iliac fossa, but this is a rare sign of retrocaecal appendicitis in its early stages. Soreness is caused by inflammation of the appendix's serosa and the parietal peritoneum that lies on top of it. However, because of its location, retrocaecal appendicitis doesn't always cause soreness in the lower right abdomen, which can make diagnosis harder. One of the problems with diagnosing appendicitis is that it gets easier as you learn more about the symptoms of acute appendicitis [3,4]. It's important to know that the vermiform appendix can be in different places.

This is because when someone has appendicitis, the different positions of the appendix can cause different symptoms and signs that look like those of other diseases like diverticulitis and ovarian torsion [5].

**Methods of eliciting K-sign**

K-sign was checked while lying on the left side and supine. The posterior abdominal wall was percussion-palpated in an area bounded by the spine, the 12th rib, the iliac crest, and the lateral edge of the posterior abdominal wall. Starting at the side edge of the back wall of the abdomen, percussion is applied from the 12th rib to the iliac crest, moving from above to below. The whole area is then felt to see if there is any soreness; this is done starting from the 12th rib each time. You can also check for the K-sign by pressing on the area from the side of the back wall of the abdomen all the way to the spine, going from the side wall to the spine and back again, starting from the side wall and writing down the exact spot where it hurts.

**Case Presentations**

**Case Report 1**

A 10-year-old boy came to Palanpur Civil Hospital, surgery on call, with pain in his lower right belly and a fever that had been going on for 12 hours. He had been sick and had a fever in the past. According to the abdominal finding, the right iliac fossa is painful to touch deeply. The K-sign was positive, and there was soreness between the middle of the psoas muscle and an area next to it that ran laterally to the psoas muscle and went up from the iliac crest. The psoas sign was also good. An abdominal sonogram showed a structure that could not be compressed in the right iliac fossa, which is a sign of a swollen appendix tip. The patient had an appendectomy, and the 8 cm long, swollen appendix was placed behind the urethra. The appendix was full of pus and faeces. The time after surgery and the follow-up were routine.


Figure 1. Retrocaecal appdendix in ultrasonography scan

**Case Report 2**

A 23-year-old man came in with mild pain in his right side, fever, vomiting, and loss of appetite that had been going on for two days. At the general checkup, everything looked fine, but there was a fever. On the abdomen exam, there was rebound soreness and Rovsing's sign. The psoas sign was bad. The K-sign was positive in an area that went from the side of the psoas muscle to the side that went from the iliac crest. The abdominal sonography came back normal. The patient had surgery to remove an appendix, and during the procedure, doctors found a swollen, 10.6-centimeter-long paracoiling appendix with faeces inside. Histopathology showed that it was appendicitis. There was no follow-up.

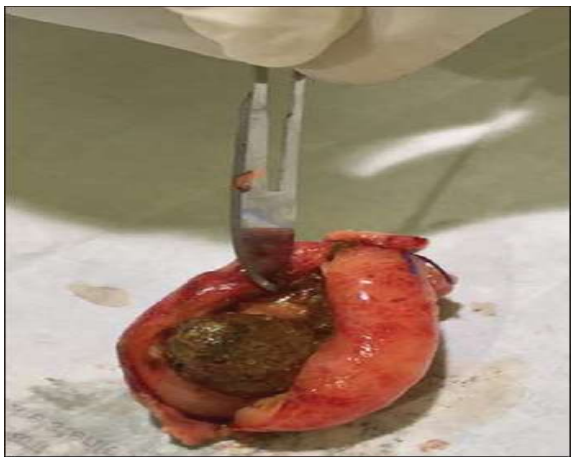

Figure 2. Fecolith in specimen of appendix

**Case Report 3**

A girl who was 11 years old came in with stomach pain and puking that had been going on for 12 hours. She was admitted to be watched, and after six hours, the pain moved to the right iliac area and she got a fever. She had a fast heart rate and low blood pressure. An inspection of the abdomen showed that the right iliac fossa was not painful. The psoas sign was good. It was discovered that the K-sign was positive once a week in a small

area on the psoas muscle and the neighbouring posterior abdominal wall, extending above the iliac crest. Sonography of the abdomen shows a structure that can't be compressed, which is a sign of a subacute appendix. The patient had surgery to remove an appendix, and a 6 cm retrocaecal appendix with several faeces inside was seen. The patient was sent home on the fifth day after surgery and had a smooth follow-up.

## Case Report 4

A 30-year-old man came in with pain in his right upper belly, vomiting, and a fever that had been going on for two days. The person looked dehydrated and had a fever, low blood pressure, and a fast heart rate. The blood test results point to leucocytosis. On evaluation of the abdomen, there was tenderness in the upper and middle right quadrants. The right iliac fossa did not hurt. The psoas sign was good. The K-sign was positive from the iliac crest to the 12th rib along the side of the psoas muscle. An X-ray of the abdomen shows a small ileus in the upper right part of the abdomen. An ultrasound of the abdomen showed that the patient had acute appendicitis and a buildup of free fluid around the appendix. The patient had surgery to remove an appendix, and during the procedure, a retorcaecal, subhepatic, 15.4 cm long appendix with pus surrounding it was found. The histopathology report suggests that the patient had appendicitis, and both the surgery and the follow-up time went smoothly.

## Case Report 5

A 10-year-old girl came in with pain in her stomach and puking that had been going on for two hours. She was admitted to be watched, and after six hours, the pain moved to the right iliac area and she got a fever. An check of the abdomen shows that the right iliac fossa is not painful. The psoas sign was good. The K-sign was positive in a small area on the psoas muscle and the back wall of the abdomen next to it, with the iliac crest extending above it. On the belly X-ray, there was a localised ileus in the lower right corner. An ultrasound of the abdomen showed a structure that could not be compressed, which is a sign of a swollen appendix. The patient had an appendectomy, and a 7-cm retrocaecal appendix with several faeces inside was seen. The patient was sent home on the fifth day after surgery and had a smooth follow-up.

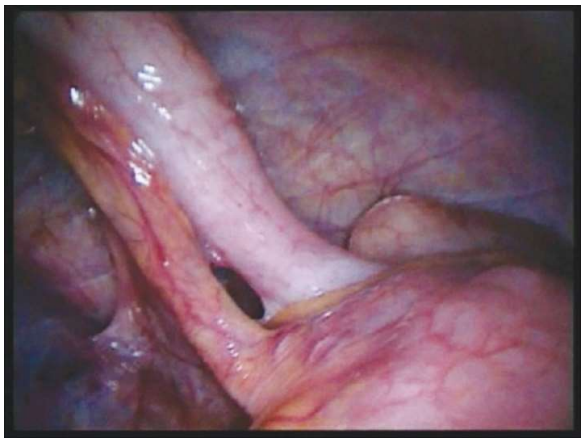

Figure 3. Inflammed appendix

**Discussion**

It is hard to tell what kind of appendicitis someone has in the retrocaecal area, and it may spread more slowly than in other places on the body. Retrocaecal appendicitis can be reliably diagnosed by taking a patient's medical history, doing a physical check, and then running lab tests. The same as all the other places in the appendix. There is a high chance that this retrocaecal appendicitis will cause changes in the retroperitoneum that are inflammatory and involve fat stranding that can reach the fasciae and fatty tissue in the retroperitoneum. It is possible to feel pain over the appendix in all kinds of appendicitis, but it is hard to feel pain in the right iliac region when you have retrocaecal appendicitis. This happens because the swollen caecum blocks the pressure from the palpating hand reaching the inflamed appendix, which is why deep pressure in the lower right quadrant may not produce pain. This is known as "silent appendicitis." People who have retrocaecal appendicitis may feel some mild pain on the right side or in the shoulder. A long, swollen appendix in the retro-colic area can make it hard to tell the difference between cholecystitis (sub hepatic) and ovarian torsion. When someone has retrocaecal or paracolic appendicitis, the peritoneum on the back of the abdomen may become inflamed, which will show a positive psoas sign.

McBurney's point is located on the right lateral line, just 1-2 cm below where the right lateral plane and transtubercular plane meet. The iliac bone and its attachments make it impossible to feel pain at McBurney's point from the back. The normal length of an appendix is between 2 and 20 cm, with 9 cm being the average length. In the retrocaecal and paracolic types, it will be raised above the illac crest. In this case, tenderness will be felt where the inflamed appendix touches the posterior parietal peritoneum, which is also the location of the corresponding area of the posterior abdominal wall. The painful area will rely on the appendix's length, thickness, intrinsic position in relation to the cecum, the part of the appendix that is inflamed, its direction, the presence of fibrosis, pus, fecolith, any kinks or adhesions, and the position of the mesentery adhesion. This sign happens because an inflamed appendix rubs against the covering posterior parietal peritoneum, similar to the psoas sign. This sign can also be used to show that you have appendicitis in the right iliac fossa. In all of our cases, the appendix was long enough to cross over the iliac crest, and it was in a good place, posterior to the ileum and away from the spine. It has also been said that the meaning of a sign in an appendix is never complete without looking at the small organ's topography. The situation of an appendix that is severely inflamed can almost always be identified by the pressure method, which supports this sign [6].

The importance of the k sign in the retrocaecal and paracolic types of appendix will help with early diagnosis because these types of appendix are more likely to have gangrenous complications because their blood supply is more likely to become kinked and inflamed when the cecum is fixed [7]. One problem with the K-sign is that it can't be used to check on fat or morbid patients or people who are physically limited by spine problems. The retrocaecal appendix is covered in retroperitoneal fat, making it hard to feel. People with a very small retrocaecal or paracolic appendix may also have trouble

feeling it. K-sign can be positive in other problems in the retroperitoneum, such as renal colic, cholecystitis, ureteric colic, psoas abscess, intramuscular hematoma, and more.

## Conclusion

K-sign is a very helpful sign for diagnosing retrocaecal or paracolic appendicitis. It is also very useful for telling the difference between appendicitis and other conditions that affect the retroperitoneum, such as renal colic, cholecystitis, ureteric colic, psoas abscess, intramuscular hematoma, and more.

**Conflicts of Interest:** None to declare.

**Funding:** Nil.

**Ethical Considerations:** Addressed by the authors.

## References

1. Davenport M. ABC of General Surgery in Children: Acute abdominal pain in children. *BMJ.* 1996;**312**:498–501.
2. Kim S, Lim K, Lee Y, Lee J, Kim J, Lee S. Ascending retrocecal appendicitis: clinical and computed tomographic findings. *J Comput Assist Tomogr.* 2006;**30**(5):772–776. doi: 10.1097/01.rct.0000228151.73528.8f.
3. Rasmussen O, Hoffmann J. Assessment of the reliability of the symptoms and signs of acute appendicitis. *J R Coll Surg Edinb.* 1991;**36**(6):372–377.
4. Kalliakmanis V, Pikoulis E, Karavokyros G, Felekouras E, Morfaki P, Haralambopoulou G. Acute appendicitis: the reliability of diagnosis by clinical assessment alone. *Scand J Surg.* 2005;**94**(3):201–206.
5. Pittman-Waller V. A., Myers J. G., Stewart R. M., et al. Appendicitis: why so complicated? Analysis of 5755 consecutive appendectomies. *American Surgeon.* 2000;66(6):548–554.
6. Muntarbhorn S. Acute Retrocaecal Appendicitis. *Br Med J.* 1945;**1**(4384):61. doi: 10.1136/bmj.1.4384.61.
7. O'Connel PR. In: *Bailey's and Loves short practice of surgery.* 24. Russel RCG, Norman SW, Christopher JKB, editor. London: International student ed; 2004. The vermiform appendix; pp. 1203–1218.