Subhepatic caecum and appendix - a rare variant in an adult male cadaver
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Abstract

In unusual cases of malrotation or incomplete rotation of caecum, the appendix is not located in the lower right quadrant. When the caecum is high [subhepatic caecum] the appendix is located in the right hypochondriac region and the pain in these cases is located there, not in the lower right quadrant. In this position, the symptoms and signs of acute appendicitis may mimic acute cholecystitis, diagnosis in such cases is a great diagnostic challenge. The author observed this less frequent anomaly in a middle aged male cadaver. After opening the abdomen while tracing peritoneal reflections abnormality was identified. The caecum and appendix were present in relation with inferior surface of liver. Embryologically, the caecal swelling appears as a small conical dilation of the caudal limb of primitive intestinal loop and it is the last part of the gut to reenter the abdominal cavity. It is temporarily located in the right upper quadrant directly below the right lobe of liver. From here it descends into the right iliac fossa. The failure to descend leads to subhepatic caecum.

Key words: right hypochondriac, malrotation, undescended caecum, appendicitis.

Introduction:

The appendix is the originally tapered tip of the caecum which, due to the unequal growth of the right wall of the cecum, has become displaced onto its medial surface. A much narrowed tube in the adult, the appendix varies between 2 and 20cm in length; its average length is about 8cm. The caecum lies in the right iliac fossa. It is a large cul-de-sac continuous with the ascending colon at the level of the ileal opening on the medial side and below this with the vermiform appendix. The vermiform appendix is a narrow tube, arising from posteromedial caecal wall, 2 cm or less below the end of the ileum. The various positions are retrocaecal, pelvic, subcaecal, preileal lateral pouch, mesocoliac, leftsided (associated with situs inversus), intraheparien and lumbar and postileal. The rarer types include subhepatic, lateralmouch, mesocoliac, leftsided [associated with situs inversus] intraheparien and lumbar appendicitis (appendix is posterior, lying against the peritoneum behind or below the caecum). Embryologically, the caecal swelling appears at about the 12mm stage as a small conical dilation of the caudal limb of primitive intestinal loop, is the last part of the gut to reenter the abdominal cavity. It is temporarily located in the right upper quadrant directly below the right lobe of liver. From here it descends into the right iliac fossa, there by forming the ascending colon and the hepatic flexure. During this process the distal end of the caecal swelling forms a narrow diverticulum, the primitive appendix.

Material and methods

During the routine dissections for the undergraduates, in Guntur medical college, Guntur, Andrapradesh, we noticed less frequent anomaly of subhepatic caecum and appendix.

Observations: [fig no.1-6]

After opening the abdomen, while tracing the peritoneal reflections, subhepatic caecum and appendix were seen in the right upper quadrant directly below inferior surface of liver and it was further traced as hepatic flexure and it continued as transverse colon [fig1,2,3,4,6]. The length and breadth of caecum measured 5 x 6 cm, conical in shape and broad at the base which is exaggerated type and is immovable and fixed. The ileum opened into the posteromedial aspect.
of the caecum and about 1 cm below this the vermiform appendix opened into the caecum. The interior of caecum had ileocaecal valve consisting two flaps. The opening of appendix is narrow which is present 1 cm below the ileocaecal valve. The appendix length and breadth measured 11 X 0.7 cm. Most of the sigmoid colon was located on the right side contrary to its normal position on the left side and it was continued as rectum on the right side of urinary bladder [fig 5,6]. This may be due to emptiness in the right iliac fossa. Because of high position of caecum & appendix [subhepatic] the right iliac fossa was empty and the paracolic gutter was seen deep on right side.

**Fig. 1:** Subhepatic position of caecum and appendix.

**Fig. 2:** Subhepatic position of caecum and appendix.

**Fig. 3:** Subhepatic position of caecum and appendix.

**Fig. 4:** Subhepatic. Caecum, Appendix
Subhepatic caecum and appendix is due to failure of the proximal part of the colon to elongate during the third stage of rotation permitting the caecum to move upwards with the liver as the abdomen enlarges which is more common in males. This condition occurs in about six percent of fetuses and results in the adult caecum and appendix being located below the liver. Some elongation of the colon occurs during childhood, hence, the condition is not so common in adults.

Moore and Persaud stated that a subhepatic caecum and appendix are more common in males and occur in approximately six percent of fetuses. A subhepatic caecum and high riding appendix may be seen in adults as well as mobile caecum is seen in approximately 10% of people. In many cases the caecum hangs from the pelvic brim or is lodged entirely within the pelvic cavity. In the present case caecum is fixed and it is in abnormal position. Palanivelu et al reported subhepatic appendix with frequency of 0.09%. The exaggerated type of caecum was seen in 4%-5% of cases. Before the caecum and appendix reach the right iliac fossa they undergo three right angled rotation (270°) around the axis of the superior mesenteric artery.

The caecum found in the present case is an exaggerated type that could be seen in 4% of cases as referred by Treves. The abnormalities in the development of gut was because of dearrangements after return of gut to the abdominal cavity. These are chiefly malfixation with consequent displacement of viscera and often with excessive mobility. The migration of caecum is thought to be related to the development of ascending part of the colon. Arey stated that at times the ascending colon is anchored at a high position and is termed ‘undescended caecum’. In this present case the subhepatic caecum and appendix in a human middle aged male cadaver are found very close to the visceral surface of the liver and the ascending colon is abnormally short.

**Abbreviations:** SI - Small intestine; TC - Transverse colon; HF - Hepatic flexure; C-caecum; A-Appendix.

**Discussion**

In 10,000 subjects wakeley reported the vermiform appendix was retrocaecal and retrocolic (65.28%), pelvic (31.01%), subcaecal (2.26%) preileal (1.0%) and postileal (0.4%). The subhepatic caecum and appendix are more common in male infants than in female infants and the Subhepatic caecum is not common in adults.
Vermiform appendix is an anatomic organ with considerable significance in the medical practice. Inflammation of the appendix [appendicitis] is one of the common causes of an acute abdomen. Acute appendicitis follows the obstruction of the appendicular lumen by the carcinoma.

Conclusion

Although rare, Subhepatic caecum and appendix is of surgical importance because of the diagnostic problems which may be presented by inflammation of an abnormally situated appendix. The possible cause or causes may reside in failure of the caecum to reach the right lower quadrant upon entry into the abdomen; in an intrinsic growth defect in the ascending colon.

So, the radiological imaging and clinical interpretation is important before doing the surgery on the abdomen, especially in abnormal position of caecum and appendix.

References


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