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UNDESCENDED INFANTILE CAECUM- A CASE REPORT

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ABSTRACT

The Caecum is the commencement of the large intestine. It is the large cul-de-sac which lies in the right iliac fossa and continues with the ascending colon at the level of the ileal opening.[Gray's Anatomy 2000] Normally caecum lies in on the peritoneal floor of the right iliac fossa and its lower end lies at the pelvic brim [Sinnatamby CS 1999]. The shape of caecum has been classified into four types, ie, conical 2%, quadrate 3%, 90% normal and ampullary 4% by Treves. During routine cadaveric dissection by I MBBS students at BMCRI Bangalore, a variation is seen in a 60 year old female cadaver. The caecum is conical in shape and found in the right lumbar region. Length of the caecum is 5 cm and breadth 5.25 cm. The appendix is retrocaecal and its length 6 cm. This variant shape and position of the caecum can be explained on an embryological basis. The congenital anomaly of undescended caecum gives rise to confusion in diagnosis of appendicitis. The Mc Burneys point used for locating the tenderness of appendicitis totally depends on the normal position of the base of appendix. Despite extraordinary advances in modern radiographic imaging, diagnosis of acute appendicitis remains an enigmatic challenge. A knowledge of variable positions of caecum and appendix will help in diagnosing cases of appendicitis with atypical presentations and in planning proper incisional techniques preoperatively.

Keywords: Caecum, undescended caecum, conical caecum, appendix.

INTRODUCTION

The Caecum is the commencement of the large intestine. It is the large cul-de-sac which lies in the right iliac fossa and continues with the ascending colon at the level of the ileal opening on the medial side and below this with the vermiform appendix. Its average axial length is 6 cm and breadth about 7.5 cm. Usually the caecum is covered by peritoneum on all sides¹.

Normally caecum lies in on the peritoneal floor of the right iliac fossa and its lower end lies at the pelvic brim².

The shape of caecum has been classified into four types according to Treves 1885¹.

Anatomical and topographical variations of the caecum are known to occur. Appendicitis is one of

the most common clinical conditions that require emergency surgery. Variations in anatomical location of appendix can result in different clinical presentations and the ultimate position of the appendix is influenced by the caecum, which varies in contour and even in position.

Surgeons performing abdominal operations in adults and children require a thorough knowledge of normal anatomy and variations of the caecum and appendix. It helps them to make optimal diagnosis of various pathological conditions related to these organs and treat accordingly³.

MATERIALS AND METHODS

During routine cadaveric dissection by I MBBS students at BMCRI Bangalore, a variation is seen

in a 60 year old female cadaver. The anterior abdominal wall doesn't show any surgical scar and when opened a variation in the position and shape of the caecum is found. The position of the caecum and its shape is noted down. The length of the caecum is measured from a horizontal line at the level of ileocaecal orifice to its lowest point and width taken at midregion. The length of the mesentery is noted. The position and dimensions of appendix and colon are also noted, measured and photographed.

CASE REPORT

The caecum is conical in shape and found in the right lumbar region. Its peritoneal coverings are normal. Length of the caecum is 5 cm and breadth is 5.25 cm. The appendix is retrocaecal and its length 6 cm. The appendicular orifice is 2.75 cm posteromedial to the ileocaecal junction and the length of the root of mesentery is 10 cms.

The arteries supplying caecum and appendix are normal.

The ascending colon measures about 12.5 cm in length and 10 cm in width, transverse colon 47.5 cm in length, descending colon 27.5cm in length and the sigmoid 32.5cm.

Figure-1

DISCUSSION

Shape of caecum

The shape of caecum has been classified into four types according to Treves 1885.

First type- Infantile (conical) type 2%

Second type- quadrate type 3%

Third type- normal 90%

Fourth type- ampullary exaggerated type 4%

Figure:2

According to Pavlov and Petrov 1968, the third type was called ampullary 78% and infundibular type similar to conical type was 13%, 9% was intermediate¹.

Three general types of caeca, (1) the infantile; (2) that prevailing in early childhood; and (3) the adult, may be regarded as a developmental

sequence. The factors of intrinsic growth and of gravity (weight-bearing of caecal contents) are considered in the evolution of the caecum from infantile to adult types⁴.

In a study conducted by Banerjee.et.al, the shape of the caeca were found to be normal/ ampullary in 88%, exaggerated in 8% and 4% conical³.

In the present case the caecum was conical in shape and the appendix arose from its apex. The appendix was retrocaecal in position and normal in length.

The ultimate position of the appendix is influenced by the caecum, which varies in contour and even in position, as a result not only of type but also of peristaltic activity, state of filling and other physiologic conditions⁴. The present case of conical caecum results in a variant positioning of the base of appendix, whose normal anatomy is usually utilized in diagnosing and treating a case of appendicitis.

Position of Caecum

Normally the caecum lies in the right iliac fossa. In the present case it was found in the right lumbar region.

In a study conducted by Delic et al., conical caecum was found in 56% cases and square type of caecum in 44% of cases. It was constant in its position in right iliac fossa in 100% of the investigated cases. The vermiform appendix was attached to the tip of the caecum in 58% of cases, to the medial wall in 32% of cases and to lateral wall in 10% of cases⁵.

In a study, done on 25 cadavers, 96% of the caeca were found in Right iliac fossa and 4% in subhepatic position. In all cases of subhepatic caecum the right colic artery was absent and middle colic supplied both the caecum and appendix³.

The dimensions of the caecum was an average of length 6cms and breadth 7.5cms according to earlier authors¹.

A retrocaecal appendix of 60% incidence is cited by Datta⁶.

The shortening of mesentery associated with an undescended caecum can increase the frequency of a volvulus like non rotation than in normal persons⁷.

In the present case, length of root of mesentery was 10 cms i.e shorter than the usual of 15 cms.

This variant shape and position of the caecum can be explained on an embryological basis.

Normal Development

At the end of second stage of midgut rotation 10th-12th week, caecum is the last to enter the abdominal cavity and at first lies near the midline high up. It grows then to the right and comes to lie under the liver. With the subsequent growth and elongation of the colon the caecum reaches the right loin.

Normally during third stage of midgut rotation between 11th week and just after birth, the caecum descends into the right iliac fossa and undergoes fixation. After birth the wall of the caecum grows unequally and the appendix comes to lie on its posteromedial aspect⁸.

Derangement of third stage of rotation

Due to faulty rotation of the midgut, caecum may occupy abnormal positions – left iliac fossa, umbilical region, subhepatic region, right lumbar region and in pouch of douglas⁶.

Rarely the caecum may lie at the level of the right colic flexure, the ascending colon is then absent⁹.

Too early fixation causes imperfect descent. So the caecum may be subhepatic or right lumbar. Deficient fixation causes pelvic caecum^{2,8}. Undescended caecum is the most common anomaly of intestinal rotation and more common in males¹⁰.

Comparative anatomy

The caecum is much longer in herbivorous mammals than carnivores. In anthropoid apes and in man it is smaller in size and its lower end regresses to form vermiform appendix. Its anterolateral wall grows out of proportion to its posteromedial wall¹¹.

CONCLUSION

The caecum being conical and lumbar in position in the present case may be due to derangement in third stage of rotation and early fixation of midgut. Further the normal unequal growth of the caecal walls after birth did not happen, thus leading to a conical caecum.

The congenital anomaly of undescended caecum gives rise to confusion in diagnosis of appendicitis. The Mc Burneys point used for locating the tenderness of appendicitis totally depends on the normal position of the base of appendix. In this case both the shape and position of caecum contribute to a variant location of the appendicular base.

The pain of appendicitis for example although initially starting in umbilical region may not shift to right iliac fossa but to right upper quadrant mimicking cholecystitis¹². Despite extraordinary advances in modern radiographic imaging, diagnosis of acute appendicitis remains an enigmatic challenge. A knowledge of variable positions of caecum and appendix will help in diagnosing cases of appendicitis with atypical presentations and in planning proper incisional techniques preoperatively. This avoids unnecessary extensions of the conventional grid iron incision.

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REFERENCES

1. Williams P.L. Gray's Anatomy -The Alimentary system. 38th ed. Newyork: Churchill Livingstone; 2000.p. 1774-1775.

2. Sinnatamby. C.S. Last's Anatomy- Regional and Applied. 10th ed. London: Churchill Livingstone; 1999.p. 249
3. Banerjee A, Kumar IA, Tapadar A, Pranay. M. Morphological Variations in the Anatomy of Caecum and Appendix - A Cadaveric Study. National Journal Of Clinical Anatomy 2012; vol 1(1): 30-35.
4. Garis.C.F.D. Topography and development of the Cecum-Appendix. Annals of surgery 1941;vol 113(4): 540-548.
5. Delic J, Savkovic A, Isakovic E. Variations in the position and point of origin of the vermiform appendix. Med Arh.2002; 56: 5-8. (Croatian) .
6. Datta A.K. Essentials of Human Anatomy. Part I Thorax Abdomen And Pelvis, 9th ed. Kolkata: Current Books International; 2010.p. 216-219
7. Kuagoolwongse C,Chapalasiri E,Chanthong P. Undescended caecum and right sided sigmoid colon with aberrant right hepatic artery: A Case Report. Siriraj Hosp Gaz. 1992; vol 44(8): 606-609.
8. Decker .G.A.G, Plessis. D.J.D. Lee McGregor's Synopsis of surgical anatomy. 12th ed. Mumbai: Wright Varghese; 1999.p. 22-30
9. Romanes .G.J, The abdominal cavity. Cunningham's manual of Practical Anatomy Volume II: Thorax and abdomen, 15th ed. Newyork:Oxford University Press; 2008.p. 141-142.
10. Gardner CEJR. The surgical significance of anomalies of intestinal rotation. Ann.surg 1950;131:879-98.
11. Sahana .S.N. Human Anatomy- Descriptive and Applied. vol II 3rd ed. Calcutta: Central Book Agency; 1980.p. 299-302.
12. Snell .R.D. Clinical Anatomy. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2003.p. 246- 260

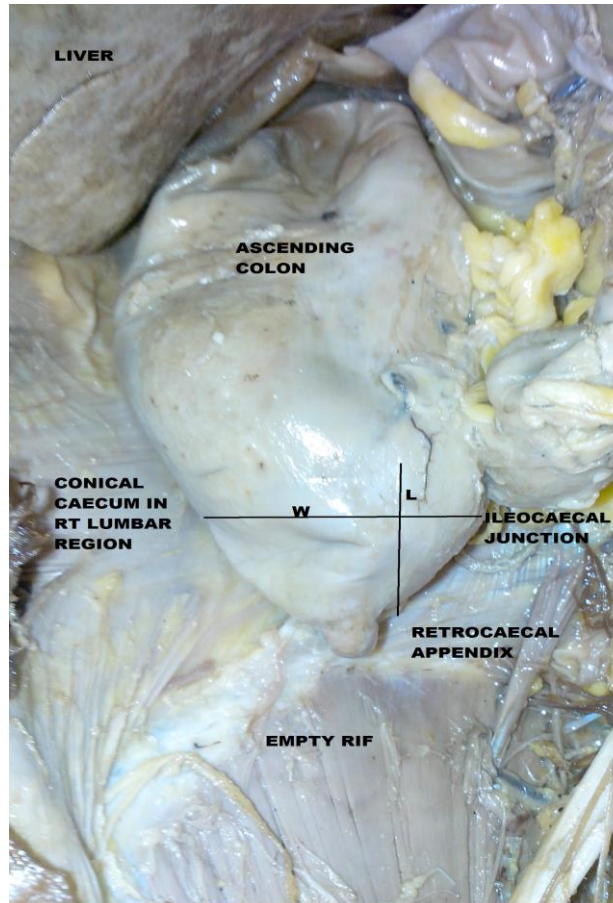


Figure no.1: Conical caecum in Right Lumbar Region, empty RIF (right iliac fossa) seen. Appendix retrocaecal.

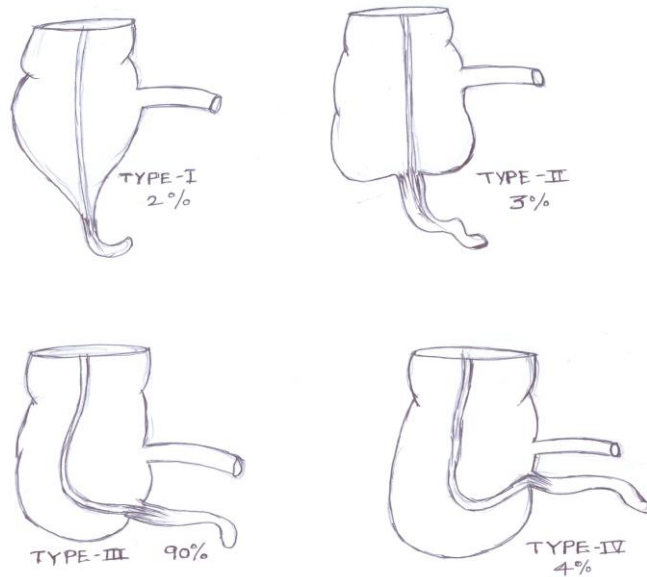


Figure no.2 - Types of caecum according to Treves