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Abstract

Background: Vermiform Appendix is a vestigial organ situated in the right iliac fossa. The base of the appendix is attached to the posteromedial wall of the caecum but its tip varies in position. In inflammation of appendix, the symptoms vary the depending upon the position of tip. The aim of the study: To observe the number of appendix, and location, position, distance between its base and ileocaecal junction, location of the base in relation to the wall of the caecum and relation of the base to the spin umbilical line. **Materials and Methods:** The study was done in 50 cases during abdominal surgeries at Government Rajaji hospital, Madurai Medical College, Tamilnadu, India. **Result:** The parameters were studied and compared with other studies. We observed Duplicated appendix in one case and the retrocaecal position (50%) was the commonest followed by pelvic position. **Conclusion:** Vermiform appendix has greater clinical significance as it is involved in many diseases such as appendicitis, carcinoma and diverticulitis. Knowing the various positions of vermiform appendix and its relations to ileocaecal junction and to spinoumbilical line will be helpful to understand the possible outcome of the diseases of appendix and also in its surgical interventions.

INTRODUCTION

The Vermiform Appendix has been considered as a vestige of evolution with a tendency to become diseased and as a bane to humanity. This “worm like” structure can now be argued to be very useful in reconstructive surgical techniques and make the appendix a useful organ. The Appendix is a narrow worm like structure present in the right iliac fossa, arising from the posteromedial wall of the caecum about 2 cm below the ileo-caecal junction and has no constant anatomical position. The appendix is suspended by a peritoneal fold called meso appendix covering its variable length and carrying the blood supply to the organ, by appendicular artery.^[1] Failure of the mesoappendix to reach the tip reduces the vascularization to the tip of the organ making it more liable to gangrene.^[2] Its position in the abdomen corresponds to the Mc Burney’s point. The position of base of appendix is constant lying 2cm below ileo-caecal valve.^[3] The ultimate position of the appendix is profoundly influenced by the changes in position and shape which the caecum undergoes during development and growth. Vermiform appendix has greater clinical significance as it is involved in many diseases such as appendicitis, carcinoma and diverticulitis. Studying various positions of vermiform appendix is helpful to understand the

possible outcome of the appendicitis by specific location of site of pain and also in surgical management of appendicitis.

MATERIALS AND METHODS

50 Vermiform appendixes were studied during abdominal surgeries conducted at surgical theatres in Government Rajaji hospital, Madurai Medical College, Tamil nadu, India. During surgical procedures, vermiform appendix was observed for its number, location, position, distance between its base and ileocecal junction, location of the base in relation to the wall of the caecum and relation of the base to the spin umbilical line. The values were noted and photo graphs were taken for documentation.

RESULTS

In the present study, appendix was found to be single in 98% and in one case it was duplicated [Figure 1] Appendix was located in right iliac fossa in 28(56%) cases, in right lumbar region in 6 (12%) cases, umbilical region in 4 (8%) cases and in inguinal region in 12 (24%) cases. Retrocaecal position was observed in 25 cases (50%) [Figure 2] followed by pelvic position in 12 cases (24%), preileal position in 5 cases (10%), paracaecal (6%) and subcaecal

position were observed in 3 cases (6%) each and the least common position was postileal in 2 cases (4%) The base of the appendix was located in the posterior wall of the caecum in 54%, in the lower pole of caecum in 30%, in the anterior wall in 8% and located in the lateral wall in 8 % of cases.

The distance between base of the appendix and ileocaecal junction ranged between 1.5cms – 3.5cms with an average distance of 2.25cm. The position of base of appendix to spino umbilical line is represented in the table. [Table 1]

Table 1: Position of base of appendix to spinoumbilical line

S.No	Relation to Spino umbilical line	No of cases	%
1.	Along SUL	19	38
2.	Above SUL	11	22
3.	Below SUL	20	40

Table 2: Location of the appendix

S. No	Name of the study	Right iliac fossa %	Right Lumbar %	Subhepatic %	Umbilical %	Inguinal %
1.	Arindom Banerjee (2012)	96	-	4	-	-
2.	Reshma (2013)	40	20	40	-	-
3.	Present Study	56	12	6	4	12

Table 3: Position of the appendix

S. No	Name of the study	Retro caecal %	Pelvic %	Pre ileal %	Post ileal%	Para caecal %	Sub caecal %	Ectopic /Others %
1.	Wakeley(12)	65.28	31.01	1	0.4		2.26	0.05
2.	Ajmani(13)	68	20	1	10	-	-	1
3.	Golalipour MJ et al (14)	32.4	33	18	2.6		12.8%	32.4% (retro colic)
4.	Ahmad Ghorbani et al (15)		55.8	1.5				
5.	Uma Maheswar Rao et al	66	26	2	2	-	4	
6.	Sudha K et al (17)	40	28	8	8	-	16	-
	Present study	50	24	10	4	6	6	

DISCUSSION

Vermiform appendix is a narrow tube which arises from the posteromedial caecal wall, approximately 2 cm below the end of the ileum.

Anomalies of the appendix are extremely rare, with a reported incidence of 0.004 to 0.009. Bifid appendix was reported by Ayoub RM et al and Griffiths EA et al.^[4,5]

According to Modified Cave-Wall bridge classification, duplicated appendix was divided into four types. Type A, partial duplication of the appendix; Type B1 (bird type), two appendices are placed symmetrically on both sides of the ileocaecal valve; Type B2 (taenia coli type), one appendix is in the usual place, and the other is far along with the taenia coli; Type C, duplication of the caecum and appendix; Type D (horseshoe type), one appendix has two openings in the caecum. Double appendix in our case belongs to type A.^[6] It may occupy different locations in the abdomen [Table 2]. Different locations of appendix in the abdominal cavity depends upon the stage of development and rotation of gut.^[7]

The tip occupies most commonly retrocaecal or retro colic position and then pelvic position. Other positions like sub caecal, preileal or post ileal occurs especially when a long appendicular artery allows greater mobility. Position of appendix in our study was compared to other authors [Table 3].

In the case of such a mobile part of the gut as the appendix, and taking into account the rapid and extensive changes which the neighboring parts undergo, together with the changes in position which the appendix itself undergoes as it follows the caecum, it is obvious that it must be subject to more or less accidental circumstances which will modify its ultimate position and account for the many and various positions in which it may be found.^[8-10]

The position of the vermiform appendix is of great interest, not only because of its evolutionary significance but also because of its pathological and surgical importance. Appendicitis was a common medical problem in man and woman at all ages from childhood to old age. The position of the organ may alter its clinical presentation, surgical approach and prognosis of the appendix related diseases. The most common position in male and female was retrocaecal in 55% and 56% respectively.^[11-18]

BhagavanNaik et al,^[19] reported situs inversus totalis in 16 years old male. on laparoscopy it was (L) sided appendicitis and Laparoscopic appendicectomy done.

In a study of Philip mwachaka et al,^[20] spin umbilical line was measured and Mc Burney's point was taken at the proximal two – third of the spin umbilical line. The relationship of Mc Burney's point and base of appendix was classified as cephalad, caudad or along spin umbilical line. The base of the appendix was located along spin umbilical line in 25 cases (52%),

below and medial to the line in 9 cases (15%) and above and lateral in 14 cases (29%). In half of the cases, the base of the appendix was not corresponding to Mc Burney's point. Thus most appendixes were located approximately at midpoint at spin umbilical line and not exactly at McBurney's point. In the Present Study, the base of appendix were along the spinoumbilical line only in 19 cases (38%). In remaining cases, it was below and medial in 20 cases (40%) and above and lateral in 11 cases (22%). The distance which separated the base of the appendix to the ileocaecal junction varied between 1.6- 2.5cm in 36 (72%) of cases, 2.6- 3.5 cm in 12 (24%) of cases, 3.6- 4.5 cm in 2 (4%) of cases.^[16]

CONCLUSION

Knowledge of the variations of vermiform appendix is essential for accurate diagnosis and treatment of the pathology of the organ. Appendicitis is the common clinical condition of appendix. Anatomic variations in the position of the inflamed appendix lead to deviations in the usual physical findings. Appendicitis in different positions may mimic other diseases like colitis, ureteric colic, pelvic inflammatory disease, torsion of ovarian cyst, ruptured tubal gestation, sub hepatic- hepatitis or biliary colic.

At present, appendectomy for appendicitis is the most commonly performed emergency operation in the world. Failing to recognize these anomalies may lead to failure of treatment and complications.

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