

EVALUATION OF THE FREQUENCY RELATIVE TO VARIATION IN THE ANATOMICAL POSITION OF VERMIFORM APPENDIX: A CADAVERIC STUDY

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ABSTRACT

Background: The fact behind an appendix being a vestigial organ and the large number of appendectomies that are carried out each year across the country lead to the importance of knowing the normal anatomical variations of the Vermiform Appendix.

Methods: We planned to carry out an Evaluation of the frequency relative to variation in the anatomical position of vermiform appendix. The study was done in the department of Anatomy and Forensic medicine, Khyber Medical College Peshawar. The subject under observation were cadavers brought for the purpose of autopsy in the Forensic Medicine Department and cadavers for the purpose of dissection classes to medical student in Department of Anatomy. Our cross sectional study was carried on a total of 370 cadavers brought to both these departments from March 2016 to March 2017. Variations in the position of appendix were noted and brought under observation for a descriptive study.

Results: Retrocecal Appendix was found out to be the most common (46%) followed by Subcecal (30%), Post Ileal (14%), Pelvic (8%) and Ectopic (2%). They subjects under observation were 23.5% Females and 76.5% Males.

Conclusion: The most commonly found position of appendix was retrocecal followed by subcecal.

Keywords: Cadaver, Vermiform appendix, Anatomical Variation, Teniae coli, Retrocecal & Situs inversus.

INTRODUCTION

The appendix lies in the right iliac fossa lying loosely as part of the Gastrointestinal Tract.^{1,2} The fact behind an appendix being a vestigial organ and the large number of appendectomies that are carried out each year across the country lead to the importance of knowing the normal anatomical variations of the Vermiform Appendix.

Among the intra abdominal organs, appendix is one of the most variable one when it comes to its position relative to the other structures lying in the abdomen.³ The Vermiform Appendix is mostly divided into these 6 categories on the basis of their anatomical variation: Retrocecal, Pelvic, Subcecal, Pre ileal, Post ileal, and Ectopic.⁴

The variations are also important clinically as it is thought and believed that they have a role in the symptomatology of the patient. ALVARADO Scoring system

is important in scoring the patient according to severity of their symptoms and to make a decision of a possible appendectomy or mere observation. The diagnosis is clinical and there is no specific or definitive diagnostic imaging or test.⁵

A great deal has been said about the variation in the different positions of the appendix but the subject is still unclear and needs attention. These variations are important in the surgical management and approach of a complicated or uncomplicated appendicitis and hence render important clinical significance.

MATERIALS & METHODS

We planned to carry out an Evaluation of the frequency relative to variation in the anatomical position of vermiform appendix. The study was done in the department of Anatomy and Forensic medicine, Khyber Medical College Peshawar. The subject under observation were cadavers brought for the purpose of autopsy in the Forensic Medicine Dept. and cadavers for the purpose of dissection in Anatomy Dept. Our cross sectional study was carried on a total of 370 cadavers brought to both these departments from March 2016 to March 2017. Variations in the position of appendix were noted and brought under observation for a descriptive study. Out of the 370 cadavers 283 were Males and the rest 87 were Females. Ethical Approval was obtained prior to starting the study.

The subjects included were all those who presented to the two departments for the purpose of autopsy or dissection. Any visible deformity which change the abdominal position of viscera or disintegrated cadavers

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were excluded. Abdomen was opened through mid-line incision, musculofascial flap was raised to have a good look on the abdominal contents. The caecum is identified and taenia coli are followed up to the base of appendix and position of the tip of appendix in relation to the caecum were observed and observations were noted down. The Age and Sex of the subjects were recorded. The Data was collected and analyzed in Microsoft Office and SPSS 22. The results were displayed in a tabulated form and interpretations were made.

RESULTS

Retrocecal Appendix was found out to be the most

common (46%) followed by Subcecal (30%), Post Ileal (14%), Pelvic (8%) and Ectopic (2%). The total sample size was 370 cadavers under observation. The subjects under observation were 23.5% Females (87) and 76.5% Males (283). The results are summarised in the form of different tables. The table below shows the different Variation in the Vermiform Appendix along with their frequency and percentage. (Fig. 1 & 2).

The mean age of the subjects was 43 Years and 6 Months. The mean age of the female cadavers was 37 Years while that of the male cadavers under observation was 50 Years. (Fig. 3) Most of the subjects belonged to Peshawar District 259 (70%) and only a few were from

Fig. 1 shows Table with the different variations of Appendix.

Retrocecal	Sub Caecal	Post Ileal	Pelvic	Ectopic	Total
170 (46%)	111 (30%)	52 (14%)	30 (8%)	7 (2%)	370

Frequency of variations of Appendix

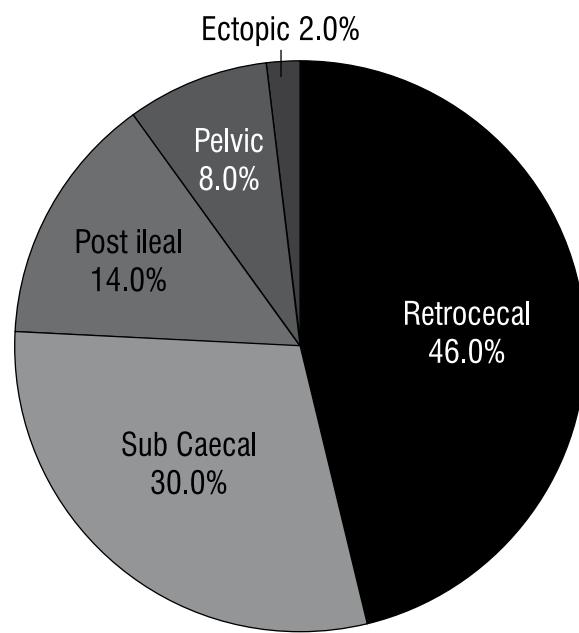


Fig. 2 shows Pie Chart with the different variations of Appendix.

outside Peshawar, belonging to Charsadda 74 (20%) and Nowshera 37 (10%).

DISCUSSION

In our study the most commonly found position of appendix was retrocecal (46%) followed by subcecal (30%). The subjects under observation were cadavers brought for the purpose of autopsy in the Forensic Medicine Department and cadavers for the purpose of dissection classes to medical students in the Department of

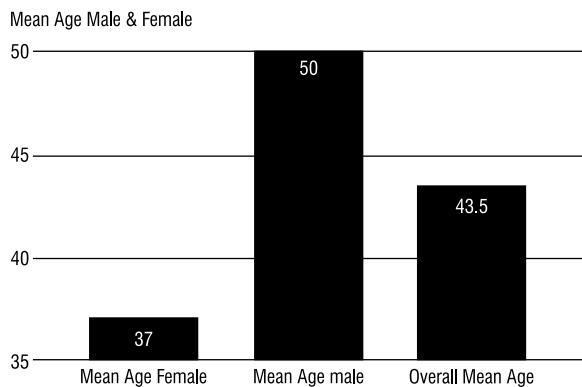


Fig. 3 Shows Bar Chart with the Male, Female and Overall Mean Age distribution.

Anatomy Khyber Medical College Peshawar. Our cross sectional study was carried on a total of 370 cadavers brought to both these departments. Variations in the position of appendix were noted and brought under observation for a descriptive study. The subjects under observation were 23.5% Females (87) and 76.5% Males (283). 70% (259) of the subjects were residents of Peshawar district. The findings of our study were consistent with those of Clegg-Lamptey et⁶.

A similar study conducted by Golalipour M et al described Pelvic position as the commonest variation of Vermiform Appendix.⁷ In our study Pelvic is the only 8% in frequency, whereas no pre ileal variation was noted or observed. A variation can be seen from Pakistani population and other populations. Further research is needed in this field to establish a better understanding of the subject. A larger sample group consisting of subjects from different age groups and ethnicities must be selected to have a sound knowledge and deeper insight into the subject.

Some of the commonest position of Vermiform appendix in the different regions of the world are as follows: In Thailand it is Retroileal, In India it is Retrocecal and in Iran it is Pelvic.^{8,9} whereas in the textbook of anatomy, Gray's Anatomy describes retrocecal as the most common variation¹⁰. These studies lead us to the conclusion that regional and ethnic differences exist when it comes to describing the most common variant of the Appendix, knowing which is of utmost importance due to the large no of appendectomies encountered in our region.

The above mentioned studies let us know the most common variants as well as the regional differences that might exist but another point that needs to be mentioned here is the condition called *situs inversus* which is also of utmost importance when it comes to abdominal surgeries¹¹. Studies have also reported double appendix, appendicular agenesis and ectopic appendix at a frequency less than 1%¹². In our study ectopic appendix was observed and reported. Whereas there was no appendicular agenesis or double appendix noted.

CONCLUSION

The most commonly found position of appendix was retrocecal followed by subcecal. A variation can be seen from Pakistani population and other populations. Further research is needed in this field to establish a better understanding of the subject. A larger sample group consisting of subjects from different age groups and ethnicities must be selected to have a sound knowledge and deeper insight into the subject. This would pave path for further research and establish a guide for surgeons as the variations play an important role while operating for appendectomies.

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