INCIDENCE OF DIFFERENT POSITIONS AND MORPHOMETRY OF VERMIFORM APPENDIX

Pooja Garg1, Pushpa Potaliya2, Shilpi Gupta Dixit3, Sarajit Ghatak4, Dheeraj Saxena5

1Junior Resident, Department of Anatomy, All India Institute of Medical Sciences, Jodhpur, Rajasthan.
2Senior Resident, Department of Anatomy, All India Institute of Medical Sciences, Jodhpur, Rajasthan.
3Associate Professor, Department of Anatomy, All India Institute of Medical Sciences, Jodhpur, Rajasthan.
4Professor and HOD, Department of Anatomy, All India Institute of Medical Sciences, Jodhpur, Rajasthan.
5Professor, Department of Anatomy, SMS Medical College, Jaipur, Rajasthan.

ABSTRACT

BACKGROUND
Vermiform appendix is a worm like diverticulum on the postero medial wall of caecum. Knowledge of position and morphometry of the appendix is important because it may produce variable symptoms and signs which mimic other diseases. Its position is also important during appendectomy because it may necessitate extension of a transverse incision or additional muscle splitting.

MATERIALS AND METHODS
This study was carried out in 35 cadavers in the Department of Anatomy at All India Institute of Medical Sciences, Jodhpur and SMS Medical College, Jaipur in routine dissection by undergraduate students. The position of various appendixes were observed and classified accordingly. Also, the various morphometric parameters were measured.

RESULT
In this study, the positions of appendix were pelvic type in 51.42% (18), retrocaecal type in 34.28% (12), preileal type in 5.71% (2), paracolic type in 5.71% (2) and promontoric type in 2.85% (1) out of 35 cadavers. Other parameters and its details shall be discussed in the presentation.

CONCLUSION
Vermiform appendix shows variations in the position and length. Surgeon should know about the different positions of appendix during appendectomy. The position and various morphometric parameters of the vermiform appendix are important in influencing the differential diagnosis of acute abdomen.

KEYWORDS
Vermiform Appendix, Morphometry, Position.

RESULTS
In this study, the variation in the position, length and diameter of vermiform appendix was as follows-

**Position**
The most common position of vermiform appendix was found to be pelvic in 51.42% (18 cadavers) cases and the least found was promontoric i.e. in 2.85% (1 Cadaver) cases. We did not find any case of mid-inguinal position of appendix.

**Length**
In this study, the length of appendix varies from 31.5 mm (Minimum) to 110.5 mm (Maximum). Average length of vermiform appendix in male was 75.02 mm and in female was 63.27 mm.

**Diameter**
The diameter of vermiform appendix varies from 4 mm (Minimum) to 10.5 mm (Maximum). Average diameter of vermiform appendix in male was 8 mm and in female was 7.8 mm.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Position of Vermiform Appendix</th>
<th>In Male (n)</th>
<th>In Female (n)</th>
<th>Mean Length (mm)</th>
<th>Mean Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pelvic</td>
<td>12</td>
<td>7</td>
<td>57.52</td>
<td>7.32</td>
</tr>
<tr>
<td>2.</td>
<td>Retrocaecal</td>
<td>6</td>
<td>4</td>
<td>78.73</td>
<td>8.21</td>
</tr>
<tr>
<td>3.</td>
<td>Preileal</td>
<td>3</td>
<td>0</td>
<td>109.5</td>
<td>9.83</td>
</tr>
<tr>
<td>4.</td>
<td>Paracolic</td>
<td>2</td>
<td>0</td>
<td>95</td>
<td>7.6</td>
</tr>
<tr>
<td>5.</td>
<td>Promontoric</td>
<td>0</td>
<td>1</td>
<td>49</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Table 1. Showing the Incidence of Different Positions, Length and Diameter of Vermiform Appendix

DISCUSSION
In this study, the prevalence of the different positions of vermiform appendix amongst populations varies with the pelvic position being commonest which is similar to Ashindoitiang JA et al (2012), whereas in other studies retrocaecal position was commonest (Collins, 1932; Bakheit and Warrilie, 1999). According to Okazi A et al,³ incidence of positions of vermiform appendix were pelvic, subcaecal, retroileal, retrocaecal, ectopic and preileal in 55.8%, 19%, 12.5%, 7%, 4.2% and 1.5% respectively and the mean length of vermiform appendix was 91.2 mm and 80.3 mm in men and women, respectively. It seems that many factors including race are involved in determining the position of the appendix. Siva Nageswara Rao studied adult as well as foetal appendix and he found incidence of retrocaecal appendix was the most common position.¹¹

According to Lamptey, retrocaecal position is less prone to inflammation.¹² Our finding is similar to Amir Denjalic and Golalipoor¹³ study in Iran who evaluated the patients in surgery ward and Yabunaka¹⁴ study who evaluated the size of appendix by sonography and Ahmad Irfan study who estimated the appendix size through therapeutic laparotomy. The most common type of appendix in all these studies was pelvic appendix. In this study, the average length of appendix was 75.02 mm in male and 63.27 mm in female and average diameter of appendix was 8 mm in male and 7.8 mm in female which were higher than the study of Siva Nageswara Rao, Sundara Setty¹¹ (2013).

<table>
<thead>
<tr>
<th>Population</th>
<th>Pelvic (in %)</th>
<th>Retrocaecal (in %)</th>
<th>Postileal (in %)</th>
<th>Preileal (in %)</th>
<th>Subcaecal (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran³</td>
<td>55.8</td>
<td>-</td>
<td>12.5</td>
<td>4.2</td>
<td>19</td>
</tr>
<tr>
<td>Pakistan⁵</td>
<td>28.6</td>
<td>57</td>
<td>9.4</td>
<td>4.0</td>
<td>-</td>
</tr>
<tr>
<td>Croatia¹⁰</td>
<td>26</td>
<td>38</td>
<td>3.8</td>
<td>3.8</td>
<td>-</td>
</tr>
<tr>
<td>Ghana¹²</td>
<td>21.6</td>
<td>67.3</td>
<td>3.8</td>
<td>4.9</td>
<td>-</td>
</tr>
<tr>
<td>Bangladesh¹⁵</td>
<td>31.7</td>
<td>65</td>
<td>3.3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 2. Showing the Positions of Appendix in Various Populations
CONCLUSION
These anatomical features of vermiform appendix are important during appendectomy because it may necessitate extension of a transverse incision or additional muscle splitting. In this part of the world where open appendectomies are common, surgeons need to be aware of this variation for better operative outcomes. The positions and various morphometric parameters of the vermiform appendix are important in influencing the differential diagnosis of acute abdomen.

REFERENCES