Original Research Paper

Volume -10 | Issue - 4 | April - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Anatomy

ASSESSMENT OF ANATOMICAL VARIATION OF SPLEEN - A CADAVERIC STUDY

Dr. Archana Narasipuram	Asst. Professor, Department Of Anatomy, Apollo Institute of Medical Sciences and Research, Hyderabad.
Dr. Anuradha. M	Assistant Professor, Department of Anatomy, Medicity Institute of medical sciences, Medchal, Hyderabad.
Dr. Mrudula chandraputula	Professor and HOD, Department of Anatomy, Apollo Institute of Medical Sciences and Research, Hyderabad.

ABSTRACT

Introduction: Spleen is a highly vascular, glandular and the largest lymphoid abdominal organ located in the left hypochondrium and partly in the epigastrium opposite to 9th to 11th ribs in humans.

Aim of the study was to assess the anatomical variations of spleen in the human cadaver.

Material and methods: The present study was done on 30 human cadaveric spleens. Institutional based observational descriptive study design was applied to study the morphometric measurements like length, width, thickness are measured using measuring tape and vernier calipers. Weight is measured with the weighing scale. Shape of the spleen, ends, notches and impressions of the spleen were observed.

Result: The length of the spleen varied between 5 to 7 cm. Width between 3 to 5cms and thickness between 0.5 to 2.5 cms. Weight varied between 99 to 200 gm. Different shapes of spleen like wedge, tetrahedral, triangular shapes were observed. Splenic notches are present on the superior as well as on the inferior borders.

Conclusion: These morphological variations are important to enhance the knowledge of medical professionals and also to the anatomists during routine dissection. Many diseases are associated with increase or reduction in spleen size. Hence the study is important.

KEYWORDS : lymphoid, splenic notch, immunological, hematological

INTRODUCTION:

Spleen is the largest lymphoid organ with a very rich vascular supply in the human body. It is an encapsulated mass of heamo-lymphoid tissue located in the left hypochondrium and partly in the epigastrium between the fundus of the stomach and the diaphragm .Spleen is reddish purple in colour. The size and weight of the spleen vary with the age and gender. Spleen usually measures 2.5cms in thickness,5 cms width and 12 cms long in a normal adult and weighs about 150-220gms.Spleen has anterior and posterior ends, superior and inferior borders, diaphragmatic and visceral surfaces[1,2].Spleen acts as a filter for blood, storage of lymphocytes and platelets. Old red blood cells are recycled in the spleen .It metabolizes the hemoglobin removed from old senescent RBCs.

Spleen develops from the dorsal mesogastrium of the lesser sac by 4th week of gestation. Spleen is lobular in form in foetus which later fuse before birth[3]. The notch in the superior border of spleen is a remnant of foetal lobulation. Palpation of the splenic notch is an important clinical sign that can indicate the enlarged spleen in a case of splenomegaly[4].

The hematological and immunological role of spleen signifies the study of spleen as clinically important. There is an increased risk for opportunistic infections post splenectomy. Hence the surgeons try to preserve the damaged splenic tissue highlights the immunological role of spleen.Spleen shows a wide range of variations in routine dissection classes and hence the need to understand the morphometry of spleen.

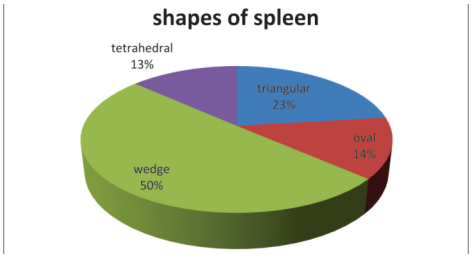
The aim of the present study is to study the morphological variation of spleen and its clinical significance in comparison with the previous studies.

MATERIAL AND METHODS :

The present study was done on 30 human cadaveric spleens dissected by standard dissection procedures. Institutional based observational descriptive study design was applied to study the morphometric measurements like length, width, thickness are measured using measuring tape and vernier calipers. Weight is measured with the weighing scale. Shape of the spleen, ends, notches and impressions of the spleen were observed. Spleens from both the sexes were considered. All recorded observations were arranged in tabular form and compared with previous studies.

RESULTS

In the present study, out of 30 spleens, 7(23%) are triangular, 4(13.3%) are oval,15(50%)are wedge shaped,4(13.3%) are tetrahedral. Weight of the spleens varied between 99 to293 gm with 4 (13.3%) weighing below100 gm, 21 (70%) weighing between 120-150gm, 6(20%) weighing about 200gm,



Graph 1 showing different shapes of spleen

Fig-1 diaphragmatic surface

Fig-2 oval shaped

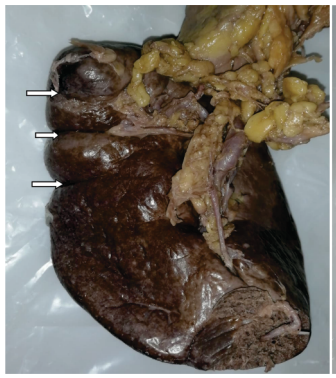


Fig-3 Tetrahedral with many notches

Fig-4 Triangular

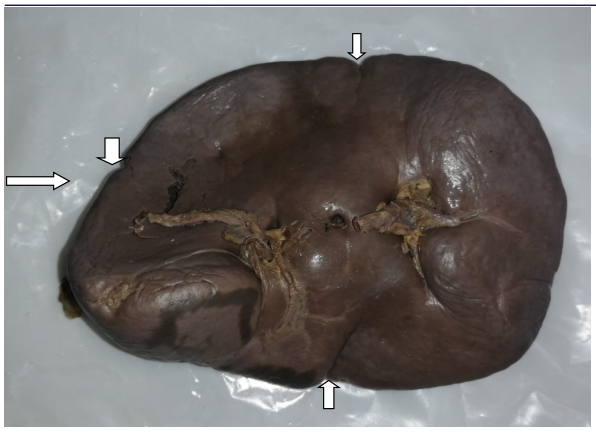
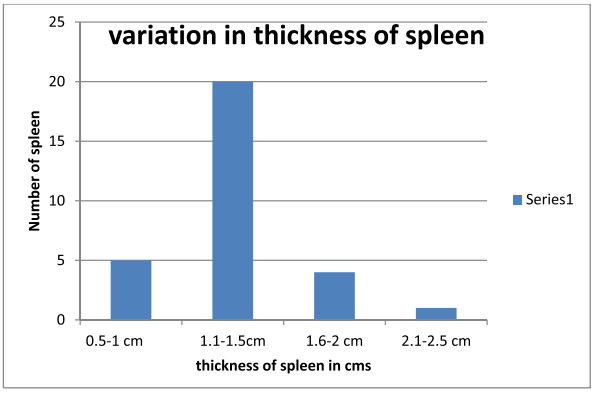


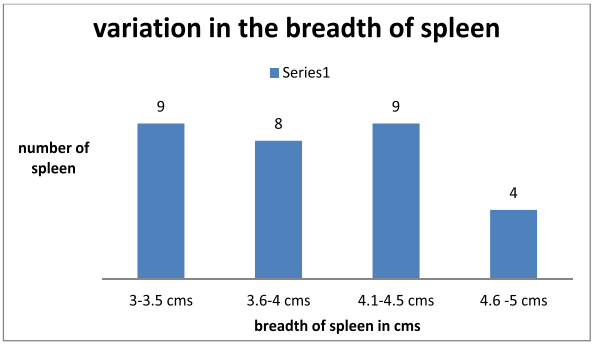
Fig-5 wedge shaped with a notch on the inferior border also

In the present study, the thickness of spleen range between 0.5 to 2.5 cm shown in graph-2

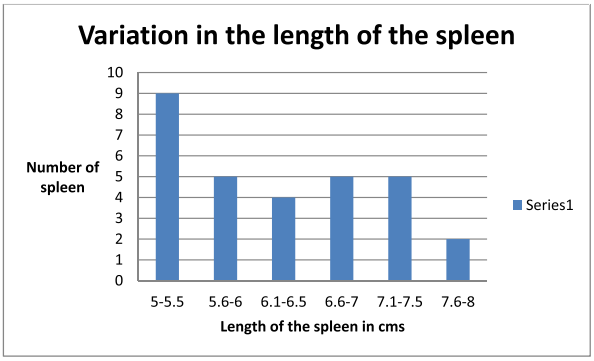


Graph 2 showing variation in thickness of spleen

In the present study, the breadth range between 3 to 5 cms shown in graph 3



Graph 3 showing variation in breadth of spleen



Graph-4 showing variation in length of spleen

In all the spleens, two ends, three borders with two surfaces visceral surface and diaphragmatic surfaces are seen. Splenic notches are observed in the superior border and a single spleen presented with a notch on the inferior border also.

DISCUSSION

In the early 20th century, spleen was considered as an important organ[5].But significance of spleen has now increased because of its immunological and cytopoietic activity especially with its relation with RBC storage and blood filtration potential[6].

In the present study, length varied between 5-8cms, breadth 3-5 cm, thickness 0.5-2.5cm.Most of them are consistent with the findings of previous studies. The findings of the study were compared with previous studies by Prashant et.al, Bahiru tenaw et.al

Comparision of shape of spleen with previous studies

	M.sangeeta et.al (2015)	Prashanth .et.al (2012)	Rajashree biswal (2018)	Present study
Wedge	33.9%	61.26%	52%	50%
Triangular	33.9%	12.61%	10%	23%
Tetrahedral	15%	21.62%	30%	13%
Oval	9.4%	-	2%	14%
Irregular	7.4%	-	6%	-

Comparision of dimensions of spleen with other studies

	Sangeeta et.al (2015)	Prashanth et.al (2012)	Present study
Length	5.05-14 cm	5-13 cm	5-8 cm
Breadth	4.3-10.7 cm	3.5-9.5 cm	3-5 cm
Thickness	2.23-5.5 cm	1.5-5.5 cm	0.5-2.5 cm

Most of the findings coincides with the previous studies.The slight difference could be due to difference in genetic make up, body constitution.

CONCLUSION:

The present study on anatomical variations of spleen intends to improve the clinical knowledge of medical professionals in assessing the splenic pathologies. Its parameters are helpful for radiologists to establish the enlargement of spleen and provide significant information to surgeons for partial splenectomy procedures by preserving the splenic tissue. The present study complements the previous research studies on spleen and encourages the medical students to carry out such studies on clinically relevant anatomical variations.

REFERENCES

1. Standring S: Gray's Anatomy: The Anatomical Basis of the Clinical Practice, 41th edition. Edinburg: Elsevier Churchill Livingstone. 2016 ; 1188-1193.
2. Rachel Koshi, Cunningham's Manual of Practical Anatomy, Thorax and Abdomen. Sixteenth Edition. Vol 2, New York:Oxford University press; 2016:157.
3. Moore KL, Persaud TVN. The Developing Human Clinically Oriented Embryology. 8 ed. Philadelphia, Pennsylvania: Saunder; 2008. 224 p.
4. Camitta BM. Nelson Textbook of Pediatrics. In: Kliegman RM, Behrman RE, Jenson HB, Staton BF. Editors. Splenomegaly. Philadelphia: 18Th ed. Pa: Saunders; 2007. p. 2091
5. Jakubvsky j, Porubsky J. Functional morphology of the spleen. Bratisl Lek Listy. 1995;96(12):637-41
6. Williams NS, Bulstrode CJK, O Connell PR, editors. Bailey & Love's short practice of surgery. London: Hodder Arnold; 2015.
7. Dr Rajashree Biswal et al JMSCR Volume 06 Issue 06 June 2018
8. Tenaw B, Muche A. Assessment of anatomical variation of spleen in an adult human cadaver and its clinical implication: Ethiopian cadaveric study. Int J Anat Var. Dec 2018;11(4):139-142.
9. Prashant Nashiket Chaware et al., The Morphological Variations of the Human Spleen Journal of Clinical and Diagnostic Research. 2012 April, Vol-6(2): 159-162
10. Naveena S. Clinical Implications of Morphological and Morphometric Variations in Human Spleen – A Cadaveric Study. Int J Sci Stud 2019;7(1):53-56