

VARIATIONS IN SPLENIC NOTCHES AND FISSURES: STUDY WITH CLINICAL IMPORTANCE

Bhumica Dang¹, Vivek Singh Malik², Sanjay Gupta³, Sudha Chhabra⁴.

¹ Demonstrator Department of Anatomy, PGIMS, Rohtak, Haryana, India.

² Associate Professor Department of Anatomy, PGIMS, Rohtak, Haryana, India.

³ Assistant Professor, Department of Anatomy, PGIMS, Rohtak, Haryana, India.


⁴ Ex- Head, Department of Anatomy, PGIMS, Rohtak, Haryana, India.

ABSTRACT

The objective of the study had been to note the presence of notches and fissures in 60 spleens. The study was done on 60 spleens of both sexes obtained from autopsy of dead bodies in the Department of Forensic Medicine and variations noted in the Department of Anatomy. The notches were observed on the upper border in 51 samples (85%) and on the lower border in 5 samples (8.33%). 6.67% of the spleen samples presented with fissures on the upper border and lower border each. Notches and fissures are quite a common occurrence in spleen. Notches on superior border are clinically significant as they assist in palpation of spleen during splenomegaly. Information of notches and fissures on the lower border of spleen are important during splenic surgeries and radiological investigations. In the present study; the notches and fissures have been noted on the 60 spleen samples.

KEY WORDS: Spleen, Notch, Fissure, Superior Border, Splenomegaly.

Address for Correspondence: Dr. Vivek Singh Malik, Associate Professor Department of Anatomy, PGIMS, Rohtak, Haryana, India. **E-Mail:** vivekmalik98@gmail.com

Access this Article online	Journal Information
Quick Response code  DOI: 10.16965/ijar.2017.468	International Journal of Anatomy and Research ICV for 2016 90.30 ISSN (E) 2321-4287 ISSN (P) 2321-8967 https://www.ijmhr.org/ijar.htm DOI-Prefix: https://dx.doi.org/10.16965/ijar 
	Article Information
	Received: 05 Oct 2017 Peer Review: 06 Oct 2017 Revised: None
	Accepted: 18 Nov 2017 Published (O): 05 Jan 2018 Published (P): 05 Jan 2018

INTRODUCTION

The spleen, the largest unit of lymphoid tissue in the body is a soft, purple organ about the size of a fist in the left hypochondrium. It is shaped like the segment of an orange [1]. Two surfaces can be usually recognized, a convex diaphragmatic surface and a visceral surface. The visceral surface has concave gastric and renal impressions and a flat colic impression. The upper or anterior border between the gastric impression and diaphragmatic surface is sharp and well defined, except where it is well interrupted by notches. The lower or posterior border separates the diaphragmatic surface and the renal impression while the lateral end

intervenes between the diaphragmatic surface and the colic impression [2].

Exaggeration of the notches along the anterior border of the spleen, sometimes with occurrence of notches also along the posterior border has been described as forming a lobulated spleen and regarded as an anomaly [3].

Spleen lies just beneath the left half of the diaphragm close to the 9th, 10th and 11th ribs [4].

The spleen develops as a collection of mesenchymal cells in the dorsal mesogastrium. Some of these cells are contributed by the coelomic epithelium lining the mesogastrium [5].

The spleen is lobulated in the fetus, but the

lobules normally disappear before birth. The notches in the superior border of the adult spleen are remnants of the grooves that separated the fetal lobules [6]. Although the lobules are not of clinical importance to the patient, but the lobules are confused as a mass originating from the left kidney by the radiologists [7].

MATERIALS AND METHODS

The present study was done on 60 spleens obtained from the dead bodies in mortuary in the Department of Forensic Medicine. The samples were carefully noted for the presence of notches and fissures. Notches are smaller in the length and cut either upper border or lower border and the diaphragmatic surface while fissures have a longer length and reach till the intermediate border. After the required work the specimens were photographed.

RESULTS

Number of notches on upper border of spleen (Refer to Table 1 and 2) Table 1 :

Table 1: Showing the number of notches and their representation in spleen.

Total number of spleen	Spleen without notch	Spleen with notches on upper border	Spleen with notch on inferior border
60	9	51	5

Table 2: Showing the Notches on the upper border of spleen.

	Notches on the upper border of spleen					Notch on the lower border
	1	2	3	4	5	1
Number of spleen	20	18	6	5	2	5

so; 44 spleens out of 60 (73.33%) had 1-3 notches on the upper border and a total of 51 spleen samples out of 60(85%) had notches on upper border.

Number of notches on the lower border of spleen (Refer to table 1 and 2): 5 spleens out of 60 specimens (8.33%) presented with single notch on the lower border.

Fissures on upper borders: We found 1 spleen with single fissure and 2 spleens with two fissures on the upper border and 1 spleen with 3 fissures on upper border. A total of **6.67% had fissures on upper border**

We found **4 spleens (6.67%) with single fissure on lower border**

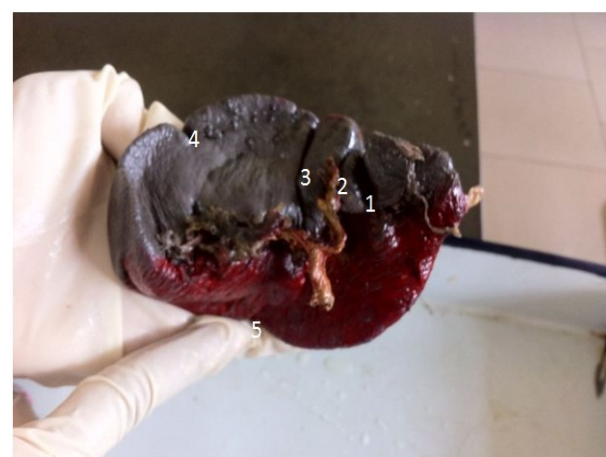
Fig.1: Photo of spleen with two fissures(1,2) on upper border.



Fig. 2: Photo of spleen with two notches(1,2) and one fissure(3).



Fig. 3: Photo of spleen with and three fissures (1,2,3) and one notch(4) on upper border and one notch (5) on lower border.



DISCUSSION

Morphologically, the notches along the borders of spleen are very variably present in different animals. The spleen in carnivores is large with notch on all the borders whereas spleen is less notched in arthropods [8].

In a study done by Das et al [9] on 100 human

spleens; in 98% cases; they found a notch on the superior border and in 2% cases they found a notch on the lower border. They found a specimen that did not exhibit notch on the superior border. In 2% cases; they found notches that continued into fissures. They also found a notch on the intermediate border in 2 specimens. Hussein et al [10] studied variations in 32 cadavers and found that in 3 spleens multiple notches were present on the superior border of spleen, 4 spleens presented deep notches on the inferior border, 2 spleens showed deep notches on medial border, 2 spleens had shape similar to liver. In a study done by Nayak et al [11] only 50% of the splenic notches were found on the superior margin. The splenic notches on the superior margin were seen in 78.6% cases by Skandalakes et al [12], 70% by Soyluolu et al [13] and 95% cases by Ungor et al [14] respectively and in our study we found splenic notches on superior margin in 85% cases. In computed tomographic study on congenital anomalies of spleen Gayer et al [15] noted that occasionally the notches or clefts on the superior border of the adult spleen were sharp and extended deep upto 2-3 cm. Gandhi et al [16] reported a spleen with six notches on its superior border, one notch on the broad anterior pole and a 2.8 cm long fissure seen on the renal visceral surface of the spleen. Rayhan et al [17] studied 70 spleens and found that notches were present on upper border of spleen in 88.57% of cases and lower border of spleen in 27.14% cases. In our study; notches on upper border in 85% cases and notches on lower border in 8.33% cases.

CONCLUSION

In the present study, 51(85%) spleen specimens showed notches on upper border and 5(8.33%) spleens showed notch on the inferior border. 9 spleen specimens were without any notches. 4 spleen specimens(6.67%) had fissures on the upper border and 4 spleens(6.67%) had fissures on the lower border.

Conflicts of Interests: None

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How to cite this article: Bhumica Dang, Vivek Singh Malik, Sanjay Gupta, Sudha Chhabra. VARIATIONS IN SPLENIC NOTCHES AND FISSURES: STUDY WITH CLINICAL IMPORTANCE. Int J Anat Res 2018;6(1.1):4803-4805. DOI: 10.16965/ijar.2017.468