



## RARE CASE OF SPLEEN WITH MULTIPLE NOTCHES AND FISSURES

## Anatomy

**Dr. Bhumica Dang** Demonstrator, Department of Anatomy, PGIMS, Rohtak, Haryana.

**Dr. Vivek Singh Malik** Associate Professor, Department of Anatomy, PGIMS, Rohtak, Haryana

**Dr. Sanjay Gupta** Assistant Professor, Department of Anatomy, PGIMS, Rohtak, Haryana.

## ABSTRACT

The spleen is the largest lymphoid tissue in the body. Spleen presents with varied number of notches on its superior border and inferior border. Spleen also presents with varied number of fissures on its surfaces. The present study was done on 60 spleens collected from Department of Anatomy at PGIMS, Rohtak. A rare case of spleen presented with one notch; three fissures on its upper border and one notch on the lower border.

## KEYWORDS

spleen, notch, fissure, lymphoid tissue.

**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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup>

Spleen lies just beneath the left half of the diaphragm close to the 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> ribs. The long axis lies along the shaft of the 10<sup>th</sup> rib and its lower pole extends forward as far as the midaxillary line and cannot be palpated on clinical examination. As the enlarged spleen projects below the left costal margin, its notched anterior border can be recognized by palpation through the anterior abdominal wall.<sup>4</sup>

The spleen develops as a collection of mesenchymal cells in the dorsal mesogastrium during the fifth week of fetal life. Growth of the dorsal mesogastrium and rotation of the stomach help in moving the spleen from the midline position to the left side of the abdominal cavity. During the early stages of development, the spleen is represented by a few splenic nodules which eventually fuse to form the spleen. During the fusion, the nodules fuse with each other smoothly except at the upper border. This is the embryological reason for having notches on the superior border. The foetal spleen is lobulated but the lobulation disappears at birth. The notches on the superior border of the adult spleen are the remnants of the grooves that originally separated the fetal lobules.<sup>5</sup>

In the present study; a rare case of spleen with one notch and three fissures on its upper border and one notch on its lower border has been reported.

The knowledge of the notches and the fissures is important as it cautions the clinician about the same and any wrong diagnosis such as injured spleen can be prevented.

**Case report:** The specimen of the spleen was obtained from 30 year old female after all the procedures were carried out in the department of Forensic Medicine and department of Anatomy in Pt. B.D. Sharma PGIMS, Rohtak. The spleen was dissected out and the peritoneum was reflected from its surfaces. The various anthropological parameters were measured and are as follows:

Its length, breadth (on the diaphragmatic surface) and thickness were 9, 5 and 2 cm. Length, breadth and thickness were measured on the diaphragmatic surface by a thread between the two fixed points. It had

triangular shape and weighed 90 gm. The spleen in context showed one notch on the upper border and three fissures on the visceral ( gastric ) and diaphragmatic surface, one notch on the lower border. The three fissures were directed downward towards the intermediate border. The two fissures measured 1.5 cm in length and the third fissure (near to the superior angle ) measured 2 cm in length thus dividing the spleen into a number of lobules.



1, 2, 3 : Fissures measuring 2cm, 1.5cm, 1.5cm respectively and reaching the intermediate border

4, 5 Notches on upper and lower border respectively.

**Fig.1:** Photo of spleen with one notch on the upper border and three fissures on the visceral and diaphragmatic surface and one notch on lower border

## Discussion

The notches and fissures in the spleen are variably present. There have been studies reporting the variations. Abnormal fissures and lobes of spleen confuse the radiologist in interpretation of radiological findings especially in blunt trauma of the upper abdomen.<sup>5</sup> Smidt reported the presence of a congenital fissure mimicking splenic hematoma.<sup>6</sup> Abnormal lobulation causes misinterpretations as a mass originating from the kidney by the radiologists.<sup>7,8</sup> 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 has been reported by Gandhi et al.<sup>9</sup> Das et al studied 100 spleens and found fissures which continued from notches in 2% cases. They also found a notch on the intermediate border in 2 specimens.<sup>10</sup> In our study, we are reporting a spleen divided incompletely into lobules by three fissures. This finding is of significance as it helps the surgeon by preventing the erroneous diagnosis ( of splenic trauma) during the radiological investigations.

## REFERENCES:

- Hamilton GF, Lockhart RD, Fyfe FW. Spleen In: Anatomy of the human body. 2nd ed.

- London.Faber ;1959.p.586-8.
2. Boyd JD, Hamilton WJ, Yoffey JM. Spleen In: Textbook of Human Anatomy, 1st ed. London. Macmillan and Co Ltd; 1958 .p.683-4.
  3. Hollinshead WH. Spleen In: Anatomy for surgeons Vol 2. 2nd ed. Philadelphia. Harper and Row Publishers; 1982 .p.444-6.
  4. Snells RS. Clinical anatomy by regions. 8th ed. New Delhi. Wolters Kluwer Pvt. Ltd;2008.p.260
  5. Nayak SB, Shetty P, R D, Sirasanagandla SR, Shetty SD.A lobulated spleen with multiple fissures and hila. J Clin Diagn Res 2014Sept;8(9):AD01-2 DOI : 10.7860/JCDR/2014/8996.4774
  6. Smidt KP. Splenic scintigraphy. A large congenital fissure mimicking splenic hematoma. Radiology.1977;122:169.
  7. Dodds WJ, Taylor AJ, Erickson SJ, Stewart ET, Lawson T. Radiologic imaging of splenic anomalies. American Journal of Roentgenology.1990;155(4):805-10.
  8. Gayer G, Hertz M, Strauss S, Zissin R. Congenital anomalies of the spleen. Semin. Ultrasound CT MR.2006;27(5):358-69.
  9. Gandhi KR, Chavan SK, Oommen SA. Spleen with multiple notches: A rare anatomical variant with its clinical significance. Int J Stud Res 2013;3:24-5.
  10. Das S, Abd Latiff A, Suhaimi FH, Ghazalli H, Othman F. Anomalous splenic notches: A cadaveric study with clinical implications. Bratisl Lek Listy 2008;109 :513-6.