

# The spleen

## Objective

- The function of the spleen
- Rupture spleen management
- The indication and complication of splenectomy
- The importance of prophylaxis against infection following splenectomy

The spleen is an organ in the upper far left of the abdomen, to the left of the stomach. The spleen varies in size and shape between people but is commonly fist-shaped, purple, and about four inches long, weight about 75-250 gm in adult, It lies along axis of 10th rib, It consist of white and red pulp, 90% of blood passing through open circulation, 10% of blood passing through direct arterio-venous circulation and the overfull flow rate is about 300 ml / min. Because the spleen is protected by rib cage, we can't easily feel it unless it is abnormally enlarged.

## Function of the spleen:-

- 1- Immune function:- production of IgM, opsonins, tuftsin.
- 2-Filter function:- remove effete platelets and RBC, iron removed from damaged Hb and return to circulation.
- 3-Pitting :- remove inclusions bodies from cells and return the repaired cells to circulation.
- 4-Reservoir function :- contain about 8% of red cells mass.
- 5-Cytopoiesis:- in the 4th month of intruterine life.

## \* **Investigation :-**

Depending on the condition, disorders of the spleen can be diagnosed using a number of tests including:-

- physical examination
- blood test
- Plain radiology :- e.g. calcification .
- Ultrasound .
- Coputed tomography scan , MRI .
- radio-isotop scanning :- Tc99
- bone marrow biopsy

## \* **Splenic rupture :-**

It caused either by direct or blunt trauma, Trivial trauma can rupture diseased spleen like in IMN or malaria. it is medical emergency but it can be challenging to diagnose as it can present in different ways. Cases can be divided into 3 groups

- Patient succumbs rapidly from massive bleeding
- Initial shock, recovery and sign of bleeding:

local sign – abdominal tenderness and rigidity are the most common sign of injury in side the abdomen but not specific to splenic injury.

- local bruising and tenderness

- abdominal distension

-kehr's sign it is pain felt in the left shoulder as a result of splenic rupture.

- shifting dullness in flanks ( balance sign )

- rectal examination . Fullness

- Delayed case :- haematoma around the spleen .

## **Investigation**

- x- ray

- ultra sound

- CT scan

## **X-ray finding of rupturs spleen**

1. Obliteration of splenic outline.
2. Obliteration of psoas shadow .
3. Fracture of one or more lower ribs on left side.
4. Elevation of left hemidiaphragm
5. Free fluid in between gas-filled intestinal coils.
6. Indentation of left side gastric air bubble

Grades of splenic injury :-

grade <sub>1</sub> => capsular injury or subcapsular haematoma

grade <sub>2</sub> => laceration not reaching the hilum.

grade <sub>3</sub> => laceration reaching to hilum.

grade <sub>4</sub> => avulsion of pedicle or shattered spleen

A / not associated with intra-abdominal injury

B / associated with intra-abdominal injury

C / associated with extra-abdominal injury

## **Treatment**

- Conservative surgery : splenorhaphy especially in children
- Splenectomy

## **splenectomy**

the common indications for splenectomy are:-

1. Trauma :- resulting from accident or operative procedure for e.g. during mobilisation of the oesophagus stomach, distal pancreas or splenic flexure of the colon.
2. Removal en bloc with stomach as part of radical gastrectomy or with the pancreas as part of distal or pancreatectomy.
3. To reduce anaemia or thrombocytopenia in spherocytosis, idiopathic thrombocytopenic purpura or hyperlensim.
4. In association with shunt or variceal surgery for portal hypertention.

### **\*Post operative complications of splenectomy :-**

1. Haemorrhage result from slipped ligature.
2. Haematemesis from gastric mucosal damage.
3. Gastric dilatation is uncommon.
4. Left basal atelectasis is common.
5. Pleural effusion.

6. Gastric fistula result from damage to greater curvature of the stomach during ligation of the short gastric vessels.
7. Damage to the tail of pancreas may result in pancreatitis, a localised abscess.
8. Thrombocytosis may occur.
9. Post splenectomy septicaemia .may result from s.pneumoniae , Neisseria meningitides , Haemophilus influenzae and Escherichia coli. The risk is greater in the young patient.
10. Opportunist post splenectomy infection( OPSI ) is a major concern. Although this problem can be avoided through measures that include offering patients appropriate and timely immunisation, antibiotic prophylaxis, education and prompt treatment of infection.

In elective splenectomy consideration should be given to vaccinating against pneumococcus, meningococcus (boht repeated every 5 years)and Haemophilus influenzae (repeated every 10 years). Yearly influenza vaccination has been recommended