Splenectomy

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CASE PRESENTATION

- 58 YO AAM
- No PMH
- 2005: Aphasia, Fevers, Generalized Purpura
CASE PRESENTATION

- Hospitalized
- Head CT Negative
- Routine Labs: platelet count <20,000
  - Peripheral smear
    - Schistocytes
    - Coombs Negative
HOSPITAL COURSE

- Diagnosis: TTP
- Plasmapheresis
- Rituximab
- Surgery Consult
HOSPITAL COURSE

- Immunized
  - H. flu
  - Pneumovax
  - Meningococcus
- Laparoscopic Splenectomy
  - Discharged POD#4
- Pathology:
  - 133 gms 10 x 8 x 5 cm
  - Congested sinusoids
- Platelet count: 274,000
INDICATIONS FOR SPLENECTOMY

EXCLUDING TRAUMA
HISTORY

- 1549 1st reported splenectomy
  - Zaccarella
  - Italy
- 1865 1st successful splenectomy
  - Paen
  - France
  - Splenic cyst
- 1991
  - 1st laparoscopic splenectomy
HISTOLOGY

- Spleen: white pulp, marginal zone and red pulp
- White pulp: surrounding the arteries
- Marginal zone: lymphatics and macrophages
- Red pulp: mature macrophages, erythrocytes
PHYSIOLOGY

- Hematologic and Immunologic Functions
- Destroys Senescent or Deformed Red Blood Cells
- Stores Platelets
PHYSIOLOGY

- Produces Red Blood Cells
- Filters Antigens
- Opsonization of Encapsulated Bacteria
ANATOMY

- LUQ
- 9th-11th ribs
- Size: 13 x 7 x 4cm
- Weight: 150 gms
## HEMATOLOGIC DISORDERS

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Description</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>ITP</td>
<td>Failure Medical Tx, Recurrent Dx</td>
<td>75-85%</td>
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<tr>
<td>TTP</td>
<td>Excessive Plasma Exchange</td>
<td>40%</td>
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<tr>
<td>Hereditary Spherocytosis</td>
<td>Hemolytic Anemia, transfusions, Leg Ulcers</td>
<td>Improves / Eliminates Anemia</td>
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<tr>
<td>Felty’s Syndrome</td>
<td>Neutropenia</td>
<td>80%</td>
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<tr>
<td>Sickle Cell Dx</td>
<td>Crisis, Infarction</td>
<td>Variable</td>
</tr>
<tr>
<td>Thalassemia</td>
<td>Transfusions, Infarction</td>
<td>Less Transfusions, Pain</td>
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</tbody>
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IDIOPATHIC THROMBOCYTOPENIC PURPURA

- Splenectomy
  - Elective Indication
    - Thrombocytopenia
    - Ecchymoses
    - Purpura
    - Abnormal Bleeding

- Antiplatelet IgG AutoABs

- Children, self limiting
  - Symptomatic thrombocytopenia present for > 1 year
IDIOPATHIC THROMBOCYTOPENIC PURPURA

- **Adults:**
  - 1-2% risk intracranial hemorrhage
  - Oral steroids
  - IV Immunoglobulin

- **Splenectomy**
  - Failure medical therapy
    - no improvement 8 weeks
    - recurrence low platelets
    - intracranial hemorrhage
  - 75-85% cure rate
IDIOPATHIC THROMBOCYTOPENIC PURPURA

- No Platelets: Splenic Artery Ligation 1st.
  - 30% patients accessory spleen
    - MUST search Intra-op
      - gastrosplenic
      - gastrocolic
      - lienorenal ligaments

- Recurrent symptoms
  - indium scan
THROMBOTIC THROMBOCYTOPENIC PURPURA

- Abnormal Plt Clumping
  - Arterioles & Capillaries
    - Hemolysis
- Classic Pentad
  - Purpura
  - Fever
  - Microangiopathic hemolytic anemia
  - Neurologic deficits
  - Renal dysfunction
THROMBOTIC THROMBOCYTOPENIC PURPURA

- Plasma Exchange
- Indication for splenectomy
  Failure of medical therapy
- Approximately 40% cure rate
Laparoscopic Splenectomy in Patients with Refractory or Relapsing TTP

- 8 laparoscopic splenectomies for refractory TTP
- Patients followed 32 months post operatively
  - 7 patients remaining relapse free

Schwartz, J MD; et.al. Arch Surgery 2001 Vol 136 p1236-1238
FELTY SYNDROME

- **Triad**
  - Rheumatoid arthritis
  - Neutropenia
  - Splenomegaly

- 1% of RA patients
- Antineutrophil IgG
- Recurrent infections & chronic leg ulcers
**HEREDITARY SPHEROCYTOSIS**

- AD
  - Erythrocyte membrane protein dysfunction
  - Anemia
  - Jaundice
  - Splenomegaly
- Splenectomy
  - Age >5yo
- Spherocytes persist
- Anemia & Jaundice improve
THALASSEMIA

- **AD**: premature destruction of RBCs
  - Pallor
  - Ulcers
  - Gallstones
  - Head Enlargement
  - Splenomegaly
- Peripheral smear: target cells
- Splenectomy
  - > 1 blood transfusion per month
  - severe pain
  - severe thrombocytopenia (<20,000)
- Children (esp. <4yo) Highest risk for OPSI
SICKLE CELL DISEASE

- Single amino acid substitution B chain of hemoglobin
- Repeated Microvascular Infarcts
- Splenomegaly
  - Autosplenectomy
- Splenectomy
  - Acute Sequestration Crisis
  - Hypersplenism
  - Splenic abscesses
SPLENIC CYSTS

- True (parasitic or nonparasitic)
  - Parasitic cysts
    - Echinococcus
  - Nonparasitic cysts
    - Congenital
    - Neoplastic
      - Epidermoid cysts
- Pseudocysts
  - Trauma
    - Remove if Symptomatic
TUMORS

- Non Hodgkin’s lymphoma
  - Most common malignancy
    - Splenectomy

- Hodgkin’s
  - Splenectomy for staging

- Leukemias: Symptomatic
SPLENIC ABSCESS

- Hematogenous Seeding
  - Organisms
    - Staph
    - Strep
    - Salmonella

- Splenectomy
- IV ABx
VASCULAR DISEASES

- Splenic vein thrombosis
  - Pancreatitis
  - Pancreatic Carcinoma
  - Trauma
  - Gastric Varices
- Splenic artery aneurysm
  - Young Women
    - Pain
    - Nausea / Vomiting
SPLENECTOMY

- Laproscopic
  - standard
- Open splenectomy
LAPAROSCOPIC APPROACH

- Mobilization splenic flexure
- Free lateral attachments
- Ligate short gastric vessels
- Divide Splenic Hilum
OPEN SPLENECTOMY

- Mobilization of ligaments
- Short gastric vessels
- Hilar Dissection
  - Ligation of splenic artery
  - Ligation of splenic vein
COMPLICATIONS

- Hemorrhage
- Pneumonia
- Pancreatitis
- Pancreatic fistula
- Atelectasis
- Pleural Effusion
- Subphrenic Abscess
- Portal Vein Thrombosis
Overwhelming Post Splenectomy Infection

- Lifetime risk of 1-5%
- URI:
  - Rapid decompensation
  - Shock
- Highest risk:
  - Children
  - Underlying hematologic conditions
- Vaccinated 10-14 days prior
  - Strep. pneumo
  - H. influenza
  - Meningococcus

- Emergency Surgery
  - Vaccinate before discharge
- Medical Bracelet
- Booster every 5 yrs
- Yearly vaccination
  - influenza
Perioperative outcomes of Laparoscopic vs. Open splenectomy
A meta-analysis with an emphasis on complications

- 51 series (2940 pts) of Splenectomy from 1991-2002
- Laparoscopic Splenectomy (2119 pts)
  - Longer to perform
  - Higher risk of bleeding
  - Superior to open
    - Decreased length of stay
    - Less pulmonary complications
    - Less wound complications

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THE END