Concept: Splenectomy or Splenorrhaphy

Following splenectomy for trauma, children experience fatal sepsis at a rate 58 to 65 times greater than that experienced by the nonsplenectomized child. Sudden in onset, the sepsis is often fatal within 24 hours despite good medical treatment. It is generally caused by the encapsulated \textit{Pneumococcus}, \textit{Meningococcus}, \textit{Hemophilus}, or sometimes \textit{Eschericia coli}. Although the cases of fatal sepsis appear to be somewhat more common when a splenectomy is performed in a child under the age of 5 years, and although the fatal sepsis is likely to occur within 2 years of the splenectomy, there are many reports of fatal sepsis due to meningitis, pneumonia, and other causes, sometimes occurring many years after splenectomy. While it is difficult to determine exactly how much increase there is in the risk of fatal sepsis following splenectomy for trauma in the adult, there is general agreement that there is indeed some increase in this risk (Leonard, Giebink, Baesl, and Krivit; Schwartz, Sterioff, Mucha, Melton, and Offord; Singer).

For all of the above reasons, it is imperative not to remove the traumatized spleen in children unless conservative management is not safe. In adults also the spleen should be salvaged unless it has been pulverized, separated from its blood supply, or unless the patient is unstable and preservation of the spleen would increase the risk of operative or postoperative fatality.

Children who have evidence of isolated trauma to the spleen can, in most cases, be successfully managed by nonoperative means (Ein, Shandling, Simpson, and Stephens) unless they have lost more than 25\%-30\% of their blood volume. These children should be observed in an intensive care unit with frequent monitoring of vital signs for 2–3 days. After an additional 4–5 days of observation, including serial liver-spleen scanning, the child may be sent home. After an additional week of bed rest at home, and 3–4 weeks of restricted activity, the child may return to his normal way of life. Delayed splenic rupture during or after nonoperative management has been quite uncommon.

Whether conservative management is also indicated in the good-risk adult patient is a question that has not yet been
answered. In the adult, where the injury is more likely to be an automobile accident rather than an athletic injury, there is a greater risk of overlooking serious injuries unrelated to the spleen if nonoperative management is pursued in a large number of cases. Nonoperative therapy is not at this time recommended for the usual splenic injury to the adult. The remainder of this chapter concerns itself with the management of splenic trauma in the adult patient, although the child in whom nonoperative management has failed, can be managed by the same surgical principles.

Indications

Splenectomy is indicated for the traumatized spleen if the patient’s condition is unstable, if he has suffered multiple injuries, if there is gross fecal contamination, if the spleen is fragmented beyond repair, or if the spleen has been separated from its blood supply. Do not risk the patient’s life at any time in order to preserve an injured spleen, especially in patients over age 50.

Splenorrhaphy or partial splenectomy is indicated in good-risk patients who do not have the above indications for splenectomy.

Preoperative Care

Resuscitate the patient by means of adequate fluid and blood replacement.

Insert a nasogastric tube.

If the diagnosis is in doubt, perform a liver-spleen or CT scan.

Operative Strategy

Splenectomy

Unlike the technique described for the removal of the diseased spleen in Chap. 64, in removing the injured spleen initiate the dissection for removing the injured spleen by dividing the splenorenal and splenocolic ligaments as the first step in the operation. This will permit delivery of the spleen and the tail of the pancreas into the incision. Then hemostasis can be maintained by compressing the splenic artery between the thumb and index finger during the rest of the dissection. In the rare case where a giant spleen has been traumatized, it may be advantageous to identify the splenic artery (see Fig. 64-1) and to ligate it before delivering the enlarged spleen.

Iatrogenic Injuries

In past years, 20%-40% of all splenectomies have been performed as a result of iatrogenic injuries with an average mortality rate of 15% (Morgenstern, 1977). Most cases of iatrogenic splenic injuries result from avulsing a patch of the splenic capsule when the stomach or the transverse colon is retracted away from the spleen. Since the splenic pulp has not been damaged in most of these injuries, it is a simple matter to control the bleeding by applying a hemostatic agent, such as Surgicel or Avitene, and then by tamponading the area with a large gauze pad. Prior to closing the abdomen, remove the gauze pad carefully and inspect the area for bleeding. This technique is not effective if the injury occurs at the hilus of the spleen.

Pitfalls and Danger Points

Failure to control bleeding
Traumatizing the pancreas