Harry S. Goldsmith, M.D.

"Scar Prevention Following a Spinal Cord Injury"

There are two types of spinal cord injuries (SCI): acute and chronic. The major problem with both of these injuries is the formation of scar tissue that occurs at the site of the SCI, with each of these injuries requiring different forms of treatment. Ramon y Cahal over a 100 years ago showed that following an SCI, scar formation develops at the site of the SCI which impedes axons from penetrating the scar formation. This condition prevents proximal axons from connecting with neural elements in the distal spinal cord. This observation was later confirmed by Freeman in the 1950s.

In the presence of an acute SCI, there is almost immediate development of edema and blood at the site of the injury. Within days, this material begins to form scar tissue believed to be due to fibrinogen present in the blood accumulation which becomes activated to form fibrin (scar). It has been well shown in the laboratory that placing an intact omental pedicle on an SCI site absorbs the edema and blood, which thereby decreases the subsequent development of scar tissue. Effort will be made at the Brescia meeting to show that omental placement on an *acute* SCI should be carried out as early as possible after injury to prevent the rapid formation of scar that routinely develops.

With a *chronic* SCI, scar tissue is already present at the injury site, and based on laboratory evidence and on a single operated patient, it will be shown that scar tissue can be removed followed by application of omentum and collagen. This application can result in the reconstruction of the spinal cord with resulting functional improvement.

The last aspect of my Brescia talk will delve into the need for new innovative clinical approaches in the treatment of an SCI. At present, an acute spinal cord injury is usually treated by stabilization of the bony spinal column, but little if any attention is directed to the injured spinal cord itself. I believe the time has come to directly treat the injured spinal cord because this is where functional improvement may well result in patients with an acute SCI.