

## INDEX OF SURGICAL PROGRESS.

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### CHEST AND ABDOMEN.

I. Traumatic Injuries of the Parenchymatous Abdominal Organs. By Dr. L. EDLER (Metz). In a series of articles representing much laborious research, the author has presented a mass of material and cases bearing on his subject. In closing he gives the following lengthy summary:

#### A.—IN GENERAL.

1. It is difficult to form an estimate of the frequency of said injuries, as a large part, whose unfavorable course is considered self-evident, do not get published.

2. To this question war-surgery answers that out of about 1000 shot wounds there occurs one of the abdominal organs mentioned.

3. The frequency of the injury of each viscus is proportional to the size of the organ, the kidneys being reckoned double.

4. Etiologically, the traumatic injuries are divided into three groups, contusions and ruptures from blunt force, direct or indirect, shot wounds, and stabs, blows and cuts from sharp weapons.

5. The general symptoms of this group are the same as those from injury to any of the abdominal organs. The most prominent are shock, internal hemorrhage and general peritonitis.

6. Shock is proportional to the intensity of the trauma and therefore most pronounced in subcutaneous, next in shot wounds.

7. The greatest danger from these gland injuries lies in hemorrhage into the free abdominal cavity, either from the afferent or efferent vessels, or from the turgescient gland substance itself. The bleeding may be primary, or secondary after transient blocking of the vessel.

8. General traumatic peritonitis is in all cases a result of septic infection whose origin is specially favored by the characteristics of the peritoneum itself and of the contents of special viscera.

9. The undecomposed secretions of the glands may exert a local inflammatory action on the peritoneum, but in themselves do not produce septic peritonitis. Liental blood and pancreatic fluid are borne by the peritoneum without irritation; gall and urine produce violent local inflammation.

10. Local inflammation of the peritoneum covering abdominal glands leads to adhesions of the organs themselves or with the abdominal walls. Completely separated parts of organs may be firmly sealed up by the later organization of such exudations. Thus, also, heterogeneous effusions (pus, urine, gall, feces) become encapsulated.

11. The specific gland cells do not participate in the healing process within the injured gland. This occurs rather from cicatricial organization of the primary thrombus by transuded white blood cells through participation of the cellular connective tissue elements.

12. The portion of the gland destroyed by the trauma is not reproduced, but a defect results.

13. If, in the further of a gland injury, traumatic inflammation of the organ—rare on the whole—sets in, it may either subside or go on to suppuration (formation of an abscess).

14. In subcutaneous gland injuries traces of the external injury are rarely visible on the skin.

15. Open gland wounds have of themselves but little tendency to suppuration; the latter is usually caused by the presence of foreign bodies (projectiles, rags, splinters of bone) in the wound canal.

16. Since the gland tissue does not participate productively but regressively, gland wounds with great loss of substance are extremely slow in healing.

17. The prognosis of gland injuries is, though not so unfavorable as formerly believed, still dubious; this lies less in the gland injury than in complications.

18. The average mortality for all the groups amounts to 63.9%. (Subcutaneous, 77%; shot wounds, 57%; stabs and cuts, 45.6%).

19. In a general way the most frequent causes of death were: extent of injury, hemorrhage and general peritonitis.

20. As regards the last two the antiseptic method offers a definite prospect of reducing the mortality in future.

21. The treatment of gland injuries in general is two-fold: (a). Mechanical-medicamentous, and (b), operative.

22. The former, directed against shock, internal hemorrhage and for preventing and combating peritonitis, is in all the groups of injuries to be carried out according to recognized principles.

23. For the general management of open glandular wounds the following points may be specially mentioned:

(a). Of retained projectiles only such cases as can be easily, quickly and harmlessly found with the fingers, well disinfected, are to be extracted.

(b). Great weight is to be laid on primary hemostasis even after dilatation of the wound to reach the source of hemorrhage. otherwise by antiseptic tamponing.

(c). All peritoneal traumatic and operative wounds are to be subjected to the strict antiseptic method.

Therefore:

(a'). Carbolie spray is to be retained (in operative wounds) despite danger from cold and intoxication.

(b'). Because of the special characteristics of gland wounds (continuing secretion) primary drainage is to be applied. Clamped caoutchouc drains are best, contra-openings being made if necessary.

(c'). Primary disinfection of the wound tract is demanded where there is no danger of renewed hemorrhage. Secondary antiseptics by irrigation should also be attempted, leaving organizing thrombi so far as possible undisturbed.

(d'). Covering dressings should consist of antiseptic material in abundance to avoid early soaking through where the glandular secretion is free.

24. Operative treatment may demand laparotomy:

(a). For local hemostasis, *i. e.*, for ligation of larger intra-abdominal vessels or closure of bleeding organs.

(b). For removal of endangering peritoneal exudations.

(c). For opening intraperitoneal collections of pus or abscesses in the gland itself.

(d). For extirpation of glandular organs.

## B.—IN PARTICULAR.

## I. INJURIES OF LIVER AND GALL-BLADDER.

25. The size, weight and attachments of the liver cause the frequent occurrence of subcutaneous lesions from indirect force—falling on the head or feet.

26. The following are the special-symptoms of liver injuries.

(a). Pain, local and irradiated. Pain in the right shoulder, although not constant, is still a very important sign.

(b). Icterus. This occurs in about one-fifth of the cases. Excluding hematogenic traumatic icterus, the kinds can be distinguished.

(a). Primary icterus arises from resorption of gall effused into the peritoneal cavity.

(b). Secondary icterus arises in the course of hepatitis (abscess-formation), from compression of the gall passages and resorption through the hepatic bloodvessels.

(c). Glycosuria is not to be considered a sign of liver injury.

(d). In open liver wounds the discharge of gall from the same is a sure and relatively frequent (41.3%) symptom. It may be primary or secondary after separation of the crust.

27. Experimental observations on animals showed injury of the liver-tissue itself to be a slight lesion cicatrizing usually in 5 to 10 days. Suppuration rarely developed.

28. As to the clinical course:

(a). Lighter injuries may heal without any symptoms.

(b). Inflammation of the liver is seldom observed.

(c). Traumatic abscess of the liver occurred in 11.3% of all injuries. Its seat was commonly on the convex side. Fever, shoulder pains, sallow skin are pregnant signs. Icterus 16%.

(d). Liver abscesses may either undergo caseation or lead to perforation. The latter, after formation of adhesions, may be into other organs, external, or into the free peritoneal cavity.

(e). General peritonitis resulted in 19.7%. This rarely ended in recovery.

29. The separate groups of injuries terminated as follows:

(a). The subcutaneous. Of all cases 85.8% died; of the uncom-

plicated 78.2% died. The average duration of cure was three weeks. The most frequent causes of death were: Size of the injury 12.3%, hemorrhage 42 $\frac{1}{2}$ %, inflammatory affections 20.9%. The right lobe was most frequently the seat of injury, and the convex side twice as often as the concave.

(b). Shot wounds. Of all cases .55% died; of uncomplicated but 39.1% died. Average duration of cure two to three months, usually from the presence of foreign bodies, notably, splinters from the ribs. Causes of death: Size of injury 27%, hemorrhage 20%, suppurative and inflammatory processes 37.5%. As in gunshot wounds of bone liver sequestra are observed from extensive fissuring of the gland tissues.

(c). Cut and stab wounds. Of all cases 64.6% died; of the uncomplicated 37 $\frac{1}{2}$ % died. Cures resulted on an average within one to two months. Death resulted from the size of the injury in 17 $\frac{1}{2}$ %, from hemorrhage in 15%, from inflammatory processes in 47 $\frac{1}{2}$ %. In this group the left lobe was more frequently involved than the right.

30. Of injuries to the gall-bladder and passages there are cures in each group. Shot wounds show the most favorable course. Of all cases 74.2% died, nearly all from general peritonitis.

31. The mortality from all liver injuries amounts to 66.8%, from the uncomplicated 54.6%.

32. Prognosis:

(a). The greatest danger lies in complications.

(b). Injuries of the convex side have a much better prognosis than those of the concave.

(c). Injury of the liver tissue alone is far less dangerous than was formerly supposed.

(d). Injuries of the gall-bladder are not absolutely fatal.

33. In treatment of liver injuries where hepatitis is anticipated, extraction of blood about the anus relieves greatly.

34. Treatment of liver abscess aims at the earliest possible evacuation of the pus, either by puncture or incision, in any case avoiding its entrance into the peritoneum.

35. Puncture is either exploratory or radical. This is indicated in deep abscesses, but should be done successively to avoid hemorrhage from the abscess walls (ex vacuo).

36. Antiseptic incision may be undertaken at one or two sittings, the former after fixation of the liver to the abdominal wall by suture. Both methods show brilliant cures, still from greater safety the one in two sittings is preferable.

37. Liver-prolapse may be removed if necessary by ligature or *écraseur*.

38. Peritoneal effusions of gall, after encapsulation has occurred, are to be treated by puncture as early as possible.

39. Wounds of the gall-bladder may, after any necessary dilatation of the wound, be smoothed and closed by suture. The physiologically dispensable bladder may be removed if necessary.

## II.—INJURIES OF THE SPLEEN.

40. The morbidly altered spleen is with relative frequency the object of subcutaneous injury (28%). It may even be caused by powerful muscle contractions (diaphragm).

41. The symptoms of rupture of the spleen are almost completely masked by those of a hæmorrhage into the peritoneal cavity. Characteristic signs are not present.

42. The diagnosis gains in probability if after trauma of the renal region there is sudden local pain as also pain irradiated towards the left shoulder. The latter sign is not so characteristic as the right-sided shoulder pain in liver injuries.

43. Open spleen wounds may be diagnosticated from the seat and direction of the wound, the quantitative and qualitative characters of the external hæmorrhage, and in some cases by digital exploration. In stab and cut wounds total or partial prolapse of the spleen is a frequent occurrence.

44. The course of experimental lesions of the spleen with relatively small hæmorrhage was notably favorable.

45. The frequency, signs and termination of traumatic splenitis are analogous to those of the liver.

46. Traumatic abscesses of the spleen, despite considerable extent, may long remain latent. It was found in 30 per cent. with 50 per cent. recoveries. Its tendency to perforation corresponds to that in liver-abscess.

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47. General peritonitis from splenic injuries is very rare, and then nearly always the result of an abscess-perforation.

48. Splenic injuries terminate as follows :

(a) Subcutaneous. Of all cases 86.7% died, of the uncomplicated. 82.3% died. Rupture of the diseased spleen is more favorable than of the healthy. Average duration of cure fourteen days. Cause of death was hæmorrhage in 86.6% . Autopsies showed the tear to be more frequently on the concave than the convex side.

(b) Shot wounds. Of all cases 83.3% died ; of the uncomplicated 65% . Splenitis was only observed after coincident contusion. Suppuration was rare and usually from the presence of foreign matter. Hæmorrhage is almost the sole cause of death in uncomplicated cases.

(c) Cut and stab wounds. All non-operative cases gave 17.1% deaths ; operative no deaths ; uncomplicated 33.3% . Duration of cure is prolonged by recurring secondary hæmorrhages.

49. The mortality from all splenic injuries is 70% .

50. Hæmorrhage is about always the cause of death from rupture and in about half the cases from shot wounds.

51. Removal of the spleen is indicated :

(a) In subcutaneous injuries where the hæmorrhage would otherwise be fatal or where the organ is extensively destroyed.

(b) In open wounds where large vessels are injured and tamponing proves useless.

(c) In deep pathological alterations of the prolapsed and in suppuration of the non-prolapsed spleen.

52. Prolapse with or without injury to the organ and abscess are to be treated according to the already described methods.

### III.—INJURIES OF THE PANCREAS.

53. Traumatic injuries of this organ are exceedingly rare and nearly always combined with those of other organs.

54. In the etiology of its subcutaneous injury, being run over across the upper abdominal region stands first.

55. There are no characteristic symptoms of its subcutaneous injury partly because pancreatic fluid does not irritate the peritoneum.

56. Traumatic inflammation of the organ is not observed in any class



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of injuries. Retention-tumors may, however, be caused by injury or compression of the excretory duct (concretions).

57. Experiments on animals prove that lesion of the gland-tissue alone may heal readily.

58. Low position of the stomach and certain positions of the body allow the pancreas to approach the anterior belly-wall and in wounds of these parts give occasion to prolapse of the gland.

59. Discharge of pancreatic fluid from the wound has not been observed after shot injuries, though once after a stab.

60. Scattered cases of cure have been described for all groups of injuries. Cut-stab wounds, after removal of the prolapse heal readily in a few weeks.

61. Prognosis in pancreatic injuries simply is not less favorable than in those of the glands.

#### IV.—KIDNEY INJURIES.

61. The injuries of these organs fall into two chief groups quite separate in deportment, the extraperitoneal (complicated, uncomplicated) and the intraperitoneal.

63. Subcutaneous injuries arise more frequently from direct than from indirect force. Muscular contractions may also lead to organic lesion.

64. Cut-stab wounds of the kidney are rarely observed.

65. Of all the abdominal organs the kidneys give the most striking symptoms of injury. They may be divided into primary and secondary.

To the former belong :

(a) Phenomena of shock (severe vomiting). This occurred more frequently and intensely than with the other organs.

(b) In extraperitoneal rupture perineal blood-extravasations form. Here the danger of bleeding to death is far less than when into the free abdominal cavity.

(c) Symptoms of general peritonitis are exceptional in extraperitoneal lesions, nearly constant in intraperitoneal.

(d) Local nephritic pain is constant and irradiated especially to the