

PERFORATED GUNSHOT AND STAB WOUNDS OF THE ABDOMEN

TREATED AT THE GOUVERNEUR HOSPITAL OF NEW YORK

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A REVIEW of the records of Gouverneur Hospital of New York City, from March 11, 1911 to August 31, 1922—a period of eleven and one-half years—shows that seventy-nine cases of gunshot and stab wounds of the abdomen were admitted. In this review twenty-seven cases have been excluded because of the lack of evidence of perforation of the peritoneal cavity. Of the remaining fifty-two cases, twenty were gunshot perforations, and thirty-two stab wounds. Of the twenty gunshot wounds there were eleven recoveries and nine deaths, giving a mortality of 45 per cent. and of the stab wounds there were twenty-three recoveries and nine deaths, giving a mortality of 28 per cent. The ages of the patients varied from six to fifty years. There were forty-nine males and three females. The time elapsing from the receipt of injury to the operation varied from one-half to twenty-four hours, with an average of slightly over two hours. The fifty-two cases were operated on by nine different visiting surgeons.

CASE I.—March 26, 1911. J. M., male, Italian, thirty-eight years, laborer. Patient was shot in the abdomen and operated on two hours after admission to hospital. When the peritoneal cavity was opened, there was a large amount of fluid and clotted blood. There were three perforations through the ileum and jejunum, a perforation of the mesentery and a bruising of the transverse colon. This case died four hours after admission of shock and hemorrhage. Autopsy showed no further hemorrhage or leakage through the suture line.

CASE II.—May 2, 1911. N. S., male, Russian, nineteen years, newsboy. This boy was stabbed in the abdomen and operated on seven hours after the injury. An incision was made through the wound and protruding omentum returned. Exploration showed the viscera uninjured. Recovery.

CASE III.—June 29, 1911. W. C., U. S., twenty-three, male, driver. Laparotomy was done one hour and fifteen minutes after a gunshot wound, but no viscera were found injured, with the exception of a small contusion of the serous coat of the small intestine. Cured.

CASE IV.—January 25, 1912. Name, nativity, race, unknown. Male. Gunshot wound of the abdomen, no operation performed, died one-half hour after admission to hospital from shock and hemorrhage. No autopsy.

CASE V.—March 10, 1912. D. M., Irish, forty, male, occupation unknown. Patient was admitted to hospital two hours after a gunshot injury and exploration showed one perforation of the omentum with no other visceral injury. Drainage. Recovery.

CASE VI.—June 16, 1912. H. W., nativity, and occupation unknown, fifty years, male. Operation showed two perforations of the cardiac end of the stomach, a long wound of the liver, running from the right to the left lobe. Death within eighteen hours due to shock and hemorrhage. Autopsy showed both lungs collapsed with a hæmopneumothorax.

CASE VII.—August 2, 1912. B. G., U. S., twenty-two, male, salesman. Admitted

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to hospital after a gunshot wound of the abdomen, lung and right thigh. At operation a large laceration of the liver was found. Liver wound packed. Recovery.

CASE VIII.—February 20, 1913. I. L., Russian, thirty-five, male, sailor. Admitted to hospital after a stab wound of the abdomen, with omentum protruding, and some intestine. Operated on one-half hour after admission. Patient had a complete evisceration and died on the ninth day of general peritonitis. No autopsy.

CASE IX.—May 14, 1913. J. K., U. S., twenty-nine, male, laborer. Operated on one-half hour after admission for gunshot wound. At operation there were two bullet wounds of the stomach, and one perforation of the liver and pancreas. Died on fourth day apparently of peritonitis. No autopsy.

CASE X.—June 1, 1913. T. A., Russian, forty-eight, male, laborer. Stab wound with omentum protruding. Operated on under spinal anæsthesia. No visceral injury found. Recovery.

CASE XI.—August 9, 1913. T. S., Italian, thirty-four, male, laborer. Gunshot wound of the abdomen. Operated on three hours after injury, two small perforations of the small intestine and rupture of the spleen, suture of the intestines and splenectomy, drainage. Recovery.

CASE XII.—August 15, 1913. M. B., U. S., twenty-two, male, printer. Stab wound of the abdomen with small intestine protruding and laceration of the arm. No visceral injury, drainage. Recovery.

CASE XIII.—August 31, 1913. F. C., Italian, nineteen, male. Gunshot wound of the abdomen, operated on soon after admission two perforations in the lower end of ileum, opposite each other necessitating an 8 inch resection with an end-to-end anastomosis and drainage. On the fourth day operated on for intestinal obstruction and a perforated bowel found. Sixth day, death from general peritonitis. No autopsy.

CASE XIV.—October 13, 1913. E. L., Italian, twenty-one, male. Stab wound of the abdomen. Operated on shortly after admission and stab wound of the liver closed with mattress suture of silk, drainage, death. No autopsy.

CASE XV.—May 1, 1914. A. K., Russian, thirty-four, male, special officer. Stab wound. No operation done, recovery. Pathology unknown.

CASE XVI.—August 27, 1914. J. L., U. S., twenty-nine, male, machinist. Operated on five hours after a stab wound of the abdomen with a piece of omentum protruding. Because of acute alcoholism this case was done under local anæsthesia. Death on fourth day. No autopsy.

CASE XVII.—December 5, 1914. M. S., Russian, fourteen, male, school boy. Stab wound of the abdomen, operated on three and a half hours after admission, omentum protruding, small amount of hemorrhage with a small hole in the stomach. Recovery.

CASE XVIII.—September 15, 1915. J. C., Irish, thirty-four, male, driver. Stab wound operated on one hour later, protruding omentum no viscera injured. Complications, stab wounds of chest and arm. Death on fourth day from peritonitis, no autopsy.

CASE XIX.—October 6, 1915. F. D., Italian, thirty, male, laborer. Stab wound with omentum protruding operated on fifty minutes later, no visceral injury.

CASE XX.—January 18, 1915. M. P., Russian, twenty-one, male, tailor. Suicide. Gunshot wound of the abdomen, operated on three hours later, two holes in stomach, one in the colon, and a large rent in the mesentery with a wound of the kidney. This case is of special interest as there was only one kidney of the horseshoe type. On the eighth day he was given solid food by his relatives, death on the ninth day from embolism. No autopsy.

CASE XXI.—April 23, 1915. L. M., Italian, thirty, male, operator. Gunshot wound of right arm and leg and abdomen. At operation shortly after admission there were eight perforations of the intestine, necessitating a six inch resection in which five perforations were found. Almost complete obstruction followed and frequent lavage

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was done. On the forty-first day the Murphy button which was used in the suture was removed. Recovery.

CASE XXII.—January 19, 1916. S. S., Russian, twenty-seven, male, presser. Stab wound of the abdomen with omentum protruding, operated on two hours after admission, no visceral injury. Died immediately after operation. No autopsy.

CASE XXIII.—January 1, 1917. A. H., U. S., twenty-two, male. Gunshot wound of the abdomen, laparotomy soon after admission, two perforations through ileum and mesentery, general peritonitis, suture, drainage. Recovery.

CASE XXIV.—March 14, 1917. A. V., Italian, thirty-one, male, operator. Multiple stab wounds of head, face and abdomen. Three-quarter inch laceration of anterior wall of stomach, sutured, drainage. Recovery.

CASE XXV.—April 8, 1917. A. B., Italian, twenty-four, male, chauffeur. Operated on for stab wound of the abdomen six hours after injury. Laceration of omentum, no visceral injury, drainage. Recovery.

CASE XXVI.—July 4, 1917. F. T., Italian, nineteen, female, operator. Fell off a chair onto scissors which perforated the abdomen. At operation one hour after admission there was a lacerated wound of the ileum, colon and the inferior vena cava. The abdomen was full of blood, suture of vena cava, with linen purse-string and closure of the intestine. Recovery.

CASE XXVII.—August 22, 1917. F. V., Italian, sixteen, male, clerk. Stabbed in abdomen twenty-four hours before operation. There was a perforation found in the gall-bladder and common bile duct. No attempt at suture was made, drainage. Recovery.

CASE XXVIII.—June 2, 1918. Italian, male. Stab wound of abdomen, operated on soon after admission, perforation of transverse colon with fecal matter in the abdomen. Suture, drainage. Death. No autopsy.

CASE XXIX.—September 6, 1919. E. W., Austrian, twenty-four, male, milliner. Stab wound of the abdomen, operated on three and a half hours after injury, small blood-vessel severed, no visceral injury, drainage. Recovery.

CASE XXX.—September 21, 1918. J. G., German, forty-four, male, kitchen man. Laceration of scalp, lip, tongue and stab wound of the abdomen with omentum protruding. Operated on three and a half hours after injury. Laceration anterior wall of stomach near cardia. Suture, drainage. Death on fifth day. Peritonitis. No autopsy.

CASE XXXI.—April 27, 1919. A. S., Italian, thirty-one, male, barber. Stab wound of the abdomen. Operated on soon after admission, rupture of the liver. Packed, drained. Recovery.

CASE XXXII.—August 17, 1919. J. M., Italian, twenty-one, male, laborer. Operated on six hours after a stab wound, laceration of omentum, no visceral injury, suture of omentum, drainage. Recovery.

CASE XXXIII.—December 3, 1919. M. J., Russian, eighteen, female. Bullet wound of liver, into right lobe, operated on one hour after admission, packed, drainage. Complications, pneumonia. Double suppurative otitis media. Recovery.

CASE XXXIV.—February 20, 1920. J. D., Irish, thirty-two, male, laborer. Gunshot wound of the liver operated on one hour later, packing, drainage. Recovery.

CASE XXXV.—April 17, 1920. S. K., U. S., twelve, male, school boy. Gunshot wound of liver and kidney, right lumbar nephrectomy, drainage, packing. Death ten hours later from hemorrhage. No autopsy.

CASE XXXVI.—June 29, 1920. H. L., Austrian, twenty-four, male, laborer. Stab wound of liver. Operated on one hour later. Suture of liver, drainage. Recovery.

CASE XXXVII.—July 26, 1920. T. K., Russian, twenty-seven, male, longshoreman. Operated on two hours after a gunshot wound in abdomen, seven perforations of small intestine. Enterorrhaphy. Drainage. Recovery.

CASE XXXVIII.—July 27, 1920. J. G., Irish, thirty, male, laborer. Gunshot wound of liver, two hours after, suture of liver, complicated by fracture of rib and severe hemorrhage. Died within forty-eight hours. No autopsy.

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CASE XXXIX.—December 13, 1920. M. S., Russian, thirty-five, male, laborer. Stab wound of abdomen, omentum protruding. Operation one and one-half hours after injury, perforation of stomach, suture, six weeks later secondary closure. Recovery.

CASE XL.—December 28, 1920. S. K., U. S., eight, male, school boy. Stab wound of abdomen. Operated on three hours after injury, perforation of stomach and omentum. Suture, drainage. Recovery.

CASE XLI.—April 13, 1921. J. J., Russian, twenty-nine, male, laborer. Stab wound of left lobe of liver. Operated upon soon after injury, suture, drainage. Recovery.

CASE XLII.—May 24, 1921. J. B., Russian, thirty-eight, male, peddler. Stab wound, operation two hours later, omentum protruding, no visceral injury, complication pneumonia. Recovery.

CASE XLIII.—June 14, 1921. I. F., U. S., twenty, male, peddler. Stab wound of stomach, two hours later repair, drainage. Recovery.

CASE XLIV.—August 18, 1921. L. L., Roumanian, twenty-three, male, student. Stab wound of the stomach, perforation of anterior wall of stomach. Suture. General peritonitis. Death on fourth day. No autopsy.

CASE XLV.—August 25, 1921. P. K., U. S., thirty-seven, male, chauffeur. Stab wound of spleen, drainage, no suture. Recovery.

CASE XLVI.—August 28, 1921. S. N., Polish, thirty-six, male, sailor. Stab wound of left chest, wrist, thigh and abdomen, omentum protruding, no visceral injury, drainage. Recovery.

CASE XLVII.—May 31, 1920. G. M., Irish, thirty-one, male. Stab wound of abdomen, with division of epigastric vessels, negative for visceral injury. Drainage. Recovery.

CASE XLVIII.—November 21, 1921. H. G., U. S., thirty-nine, male, jobber. One hour and a half after stab wound, five perforations of jejunum, perforation of transverse colon, perforation of mesentery, fifty-four inch resection of jejunum with end-to-end anastomosis with Murphy button. Recovery.

CASE XLIX.—January 16, 1922. A. D., Russian, twenty-four, male, seamen. Gunshot wound of abdomen, immediately after operation. Laceration of liver, and right kidney. Suture of liver. Right nephrectomy, counter stab wound for drainage. Recovery.

CASE L.—January 17, 1922. U. S., six, female, school girl. Gunshot wound of abdomen, one hour after injury, ten perforations were found in the ileum and three feet of intestine resected. Died twelve hours after operation of shock, no autopsy.

CASE LI.—March 11, 1922. M. C., twenty-one, male, bullet wound of abdomen. One hour after injury, double perforation of sigmoid, two double perforations of ileum, and perforation of jejunum. Eight inch resection of ileum, end-to-end anastomosis, five inches from the ligament of Treitz. Drainage. Recovery.

CASE LII.—August 13, 1922. W. W., thirty-five, male, barber. Stab wound of abdomen and chest near the heart. Two hours after injury operation. Small intestine protruding, mesentery lacerated, mesentery sutured, drainage, complication pleurisy, following pneumonia, and death on the fourth day. No autopsy.

Reference to the literature on the subject reveals a large number of articles from various hospitals and numerous reports from military surgeons on the field of battle and emergency hospitals behind the lines. During the Civil War the mortality was 90 per cent. In the Boer War about 40 per cent. without operation. This may be explained by the existence of only one or more small perforations with a bowel fairly empty as often seen in a soldier in the field. Fenner in the *ANNALS OF SURGERY*, 1902, reports 152 cases from the Charity Hospital in New Orleans, of which 96 were gunshot wounds with visceral injury. Of these 71 died; a mortality of 74 per cent.

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Winslow reports 31 cases of stab and gunshot wounds over a period of five years seven months in the *Surgery, Gynecology and Obstetrics*, May, 1922, taken from the University Hospital in Baltimore; in these cases the mortality was just under 50 per cent., in the stab cases it was 25 per cent. and in the gunshot wounds 50.5 per cent.

In summing up the Gouverneur Hospital Series the mesentery was perforated four times, the omentum five times and the inferior vena cava once. Omentum was found protruding from the abdomen five times and the intestine three times. Of the wounds of the hollow organs there was one of the gall-bladder and common bile duct, ten of the stomach, two of the descending colon, two of the transverse colon and one of the sigmoid, six of the jejunum and six of the ileum.

Of the solid organs there was one perforation of the pancreas, only two perforations of the spleen, three of the kidney and twelve of the liver. In no case, in this series, were the pelvic organs or the bladder involved. In only one instance in the series was a perforation overlooked at operation and found at autopsy and this case was an exceedingly difficult one—inasmuch as five other perforations were found.

In the last twenty-five years, or since the time of the Spanish-American War, but little advance has been made towards lowering the mortality in gunshot and stab wounds of the abdomen. All surgeons are agreed that immediate operation following injury offers the best results, although from time to time, as in one case of this series, recoveries have taken place without operation.

In an article appearing in the *ANNALS OF SURGERY*, issue of September, 1923, by Mason of Birmingham, Ala., in analyzing sixty-nine cases of "The influence of Hemorrhage on Mortality in Gunshot wounds and other injuries of the Abdomen," he lays great stress upon the feature of hemorrhage, and classifies his cases into a large hemorrhage series, with a mortality of 88.8 per cent. against a small hemorrhage series with a mortality of 31.5 per cent. He urges a more extensive employment of transfusion and suggests that auto-transfusion should be practiced in selected cases.

Certainly these perforated gunshot and stab wounds of the abdomen have furnished considerable food for thought to the surgical profession in the past and will continue to do so in the future. Possibly local anæsthesia would be a factor in lowering pulmonary complications. Since it is impossible to tell just what damage an instrument penetrating the abdominal wall has done, immediate laparotomy offers the greatest chance to the patient with a complete evisceration and thorough examination of all organs.