TRANSACTIONS

OF THE

PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING HELD DECEMBER 3, 1928

The President, DR. ASTLEY P. C. ASHHURST, in the Chair
CALVIN M. SMYTH, JR., M.D., Recorder

STENOSIS OF THE COMMON BILIARY DUCT IN AN INFANT

DR. JOHN O. BOWER, by invitation, remarked that in the ANNALS OF SURGERY, July, 1928, he reported a case of "Congenital Absence of the Gall-bladder, Cystic and Common Ducts." The review of the literature was as complete as the library of the College of Physicians permitted and included a case reported by Bergman in the year 1701 and one by Littre in 1705. During the investigation a large number of cases of Congenital Stenosis of the Common Duct were found. The majority of these were associated with absence of the gall-bladder and absence and stenosis of the hepatic and common ducts. Most of these anomalies were discovered at autopsy. A few were operated upon. Theodor in 1908 reported the case of a male child, six weeks of age, on whom he did an hepatico-colangio-enterostomy, who died eight days after the anastomosis. The gall-bladder and cystic duct were absent. In 1913, Toygaus operated upon a five-year-old girl for jaundice and abdominal pain who had an obstruction close to the Papilla of Vater—the gall-bladder, cystic and common ducts were enlarged. He thought that there must have been a congenital narrowing or valve-like obstruction in the common duct. A cholecystectomy was first done but the child became progressively weaker. Four months later the common duct was anastomosed to the duodenum and the child became strong and well. In 1927 Derwissieu operated upon a child, female, two and one-half years of age for suspected hepatic echinococcus cyst. Cholecystostomy was done with a stormy convalescence but no jaundice. The fistula did not close for six weeks and attempts to close it resulted in pain and bile retention. Cholecystogastrostomy was then attempted but the child died. Autopsy revealed that the choledochus was .5 centimetre in length and that a fold or obstruction was situated at the junction of the right hepatic and common ducts. These were the only cases that the reporter could discover that were operated upon for congenital stenosis of the common duct. He then reported the following case:

A child, twenty-one months of age, with a perfectly negative history as to delivery and up until the age of one year when she developed bronchitis accompanied by a slight fever and cough. She was not confined to bed. At the end of several days a gradually increasing jaundice developed. This was associated with abdominal discomfort. The child flexed her thighs on

the abdomen and refused to lie in the prone position. She vomited constantly. Urine became dark in color and stools were constipated and of clay color. This was of two months' duration. She was then taken to the Children's Hospital, where, following medical treatment, the jaundice disappeared in ten days. Following this she was well for six months. About August, 1927, she had an attack similar to the first; the jaundice was preceded by bronchitis and accompanied by abdominal pain. There was no

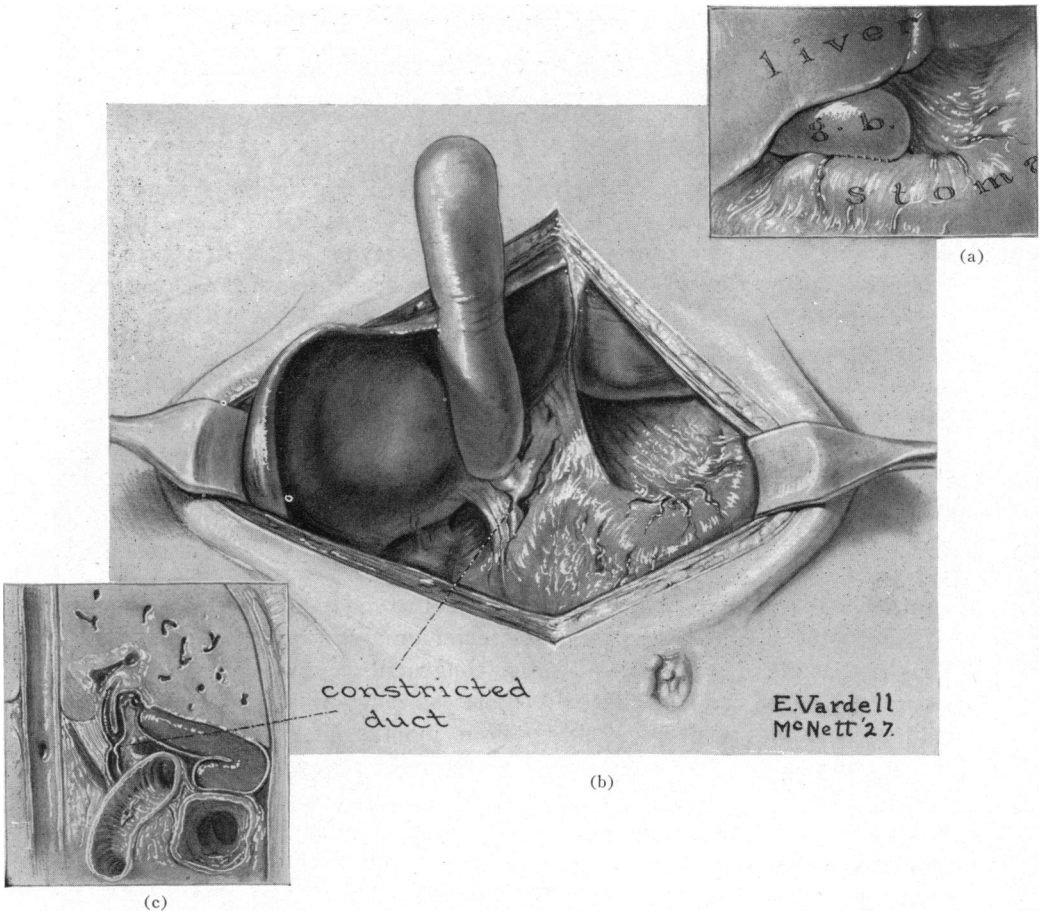

FIG. 1.—Illustration Showing (a) Cross-section of Abdomen with Acutely Flexed Gall-bladder and (b) Constricted Duct and Elongated Gall-bladder Protruding from Abdominal Incision and (c) Anastomosis of Gall-bladder to Stomach.

loss of weight. She was admitted to the Samaritan Hospital on August 12, 1927, with marked jaundice, abdominal pain, putty-like stool and dark urine.

Gastro-intestinal X-ray was negative. Twenty-four hours prior to operation the temperature was 105 by rectum, pulse 150. Immediately before operation temperature was 102.6, pulse 140. At operation August 27, 1927, under ethylene oxygen combined with novocaine anæsthesia, a moderate amount of slightly blood-tinged fluid was found in the peritoneal cavity. There was no evidence of fat necrosis. The stomach was normal in size; duodenum normal, no adhesions. Gall-bladder was not visible but covered over by omentum which was not adherent. The index finger directed posteri-

orly showed the gall-bladder acutely flexed upon itself from above downward. Upon releasing the kink the fundus of the gall-bladder immediately presented itself about one centimetre outside the abdominal wound. It was markedly tense, cylindrical in shape and projected about three centimetres above the edge of the liver. It was about fifteen centimetres in length. No calculi were felt. The cystic, common and hepatic ducts were distended. The common duct was stenosed directly below the junction of the cystic and common ducts. A finger in the foramen of Winslow disclosed no pathology. The pancreas was slightly swollen. The liver was slightly larger and darker than normal, surface mottled but there was no visible evidence of cirrhosis. The gall-bladder wall was grayish-blue and about three times its normal thickness. About forty cubic centimetres of bile were removed by aspiration. An anastomosis of the lateral aspect of the fundus of the gall-bladder, beginning about 1.5 centimetres from the extreme, was made into the stomach directly proximal to the pyloric vein. The opening was about 1.5 centimetres. A cigarette drain was placed directly below the anastomosis and the closure was completed with chromic catgut and interrupted sutures of silk. Directly following the operation the child was given thirty cubic centimetres of mother's serum intramuscularly. Enemas containing twenty grains of calcium lactate, four drachms of glucose and three ounces of water were given every three hours. Twelve hours after the operation the child vomited bile-stained mucus, and twenty-four hours after operation bile-stained fluid was siphoned from the rectum. Thirty-six hours after operation she passed a liquid green stool and at the end of forty-eight hours expelled considerable flatus. Forty-eight hours after operation the temperature was 99.4, pulse 100. Following this, there was a slight rise in temperature and pulse which gradually dropped to normal within four days. Fluids were given by mouth and gradually increased until at the end of seventy-two hours the child was taking semi-solid food. The drain was removed on the fourth day. Following this the child's recovery was uneventful. The wound healed primarily and the child was discharged from the hospital October 5, 1927.

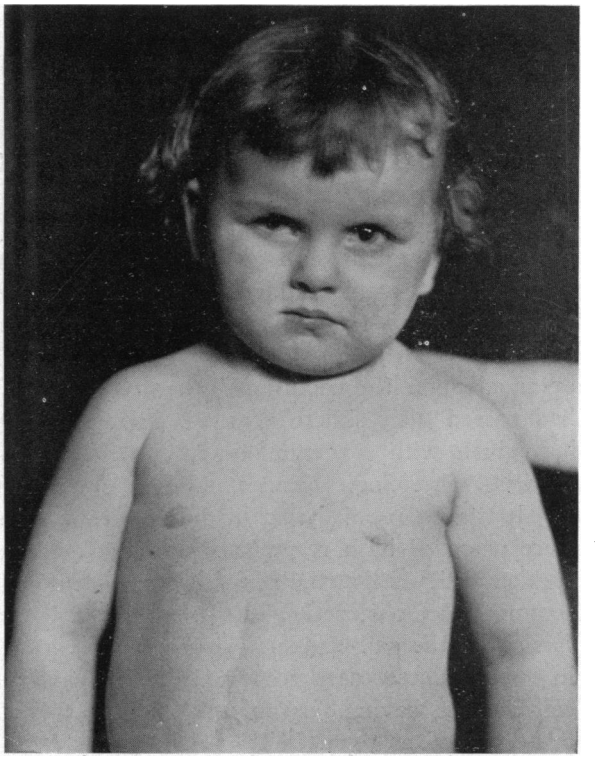

FIG. 2.—Photograph of Child Fifteen Months After Operation.

She returned to the follow-up clinic, January 25, 1928, and radiographs were taken following the administration of bismuth. No evidence of bismuth

could be demonstrated in the gall-bladder. Fifteen months after operation the child is in excellent health, has had no recurrence of jaundice, stools and urine are normal.

DOCTOR BOWER added that in attempting to correlate the symptoms and signs present in this case with the pathology found at operation, two pertinent questions present themselves. First, if a stenosis of the common duct was present at birth why should the development of symptoms be delayed for a year? Second, what part did the acutely flexed fundus play in the pathology? Regarding the first point it seems to be a well-established fact that a very close relationship exists between the quantity of the end products produced by the liver and the amount required to adequately supply the physiologic needs of the body. This is clearly demonstrated in the reports reviewed. One infant lived 216 days; another 150 days with complete absence of the gall-bladder, cystic, common and hepatic ducts, and the average duration of life for the thirteen cases reported was seventy days. Absence of the gall-bladder, cystic and common ducts is compatible with normal existence, if the hepatic ducts empty into the duodenum. Cases have been reported in which the anomaly was found to be present in patients operated upon for conditions other than biliary disease. Several of them had passed their sixieth year. It would appear from the cases cited that individuals with congenital defects in the biliary passages can maintain an apparent physiologic balance until certain conditions arise which interrupt it. It will be recalled that in the case reported the two attacks of jaundice were preceded by a respiratory infection. Regarding the second point the speaker believes that the acute flexion of the gall-bladder was a sequence of common duct obstruction due to infection. It could not be confused with torsion of the gall-bladder, similar to the eighteen cases reported by Sutter in 1925. These cases occurred in adults and were usually associated with gall-bladders having long mesenteries. Neither could it be confused with the acute flexion as reported by Bartel (forty cases) in which a groove began below the tip, vertical to the long axis of the gall-bladder and extended over half its surface, giving the gall-bladder the appearance of a tobacco pipe; these cases were observed in adults and were not associated with jaundice. Acute torsion and flexion can therefore be ruled out in this case.

ENTEROTOMY FOR INTESTINAL OBSTRUCTION

DR. JOHN B. FLICK remarked that not infrequently, in acute intestinal obstruction, the propulsive power of the overdistended gut above the block is so impaired that even after the obstruction is relieved the fæcal contents and gas remain stagnant. Absorption of this highly poisonous material constitutes the greatest danger. It is logical, therefore, in certain cases, even if enterostomy is to be performed, to first empty the intestines as completely as possible. In the cases herein reported the performance of enterotomy became almost a necessity because of inability to replace, without risk of injury, distended intestine which had been forced through the abdominal wound.

The first case, a negro thirty-nine years of age, was admitted to the Pennsylvania Hospital August 29, 1927. He gave a history of appendectomy with drainage one year previous. He apparently had had an obstruction for five days as indicated by his history. After gastric lavage and hypodermoclysis his abdomen was opened. The peritoneal cavity contained a large amount of clear amber fluid. During exploration small intestine escaped through the wound and could not be replaced. The obstruction was due to a band of adhesion running to the cæcum just above the appendectomy scar under which a loop of intestine had been caught. This was divided and the collapsed bowel distal to the point of obstruction was at once seen to fill. A small incision was made in the ileum and about a quart of liquid fæcal matter and much gas emptied out. The incision in the ileum was closed by a purse-string suture and this inverted. The abdomen was closed without drainage. A tube of the Rehfuss type was introduced into the stomach on the following day and left in place. The patient died seventy-two hours after operation. The autopsy showed distention of the stomach and intestines except the colon which was contracted. The intestines were described as dark in color and matted together by thin fibrinous adhesions with marked kinking. No leakage had occurred at the site of enterotomy, but on careful examination a small amount of pus escaped from the holes made by the sutures.

This patient obviously was operated upon too late and perhaps should have received the possible benefit of an enterostomy, after emptying the bowel.

The second case, a negro twenty-six years of age, was admitted to the Pennsylvania Hospital January 26, 1928. He gave a history of an operation for appendiceal abscess in 1918 and for intestinal obstruction in 1926. He apparently had had a partial obstruction for eight days which now was complete. He had a small bowel movement following an enema forty-eight hours before operation. When the abdomen was opened there was considerable free fluid in the peritoneal cavity. The obstruction was due to a band of adhesion under which a loop of small intestine had been caught. This was divided. The small enormously distended intestine was emptied through a small incision in the ileum. Over two quarts of fluid and much gas escaped. The opening was closed with two rows of 0 chromic gut sutures. The intestine was replaced and the omentum pulled down over it. The abdomen was closed without drainage. The patient was given 500 cubic centimetres of normal saline solution intravenously. He made a good recovery.

The third case, a negress forty-nine years of age, was admitted to the Pennsylvania Hospital August 27, 1928. She gave a history of two previous operations, one for a kidney and the other for a pelvic condition. Rectal examination failed to reveal a growth. She was well until sixteen days before operation when she developed sharp abdominal pains and vomiting. She continued to pass gas until about two days before operation. When the abdomen was opened both large and small intestine were found congested and enormously distended. Several coils of small intestine at once escaped from the abdominal cavity. On puncture much gas escaped and a small amount of liquid fæcal matter. The opening in the small intestine was closed with two rows of 0 chromic gut sutures and the intestine returned to the abdominal cavity. The distention was sufficiently relieved to permit satisfactory exploration. A hard growth was felt in the lower sigmoid. A left inguinal colostomy was then done, the bowel being opened at once and a mushroom catheter fixed in place. The original abdominal incision

was closed without drainage. The patient made a good recovery except for wound infection and left the hospital refusing operation for removal of the growth.

DR. DAMON B. PFEIFFER remarked that he had come to regard enterostomy or jejunostomy as of the greatest value in those conditions which follow inflammatory conditions in the lower abdomen, such as peritonitis or tubal infection. In such conditions there is a time post-operatively when the intestines are matted together by plastic lymph; they become knuckled about the drainage which has been inserted and as a result of paralysis due to infection and distention, the coils are caught in lymph and there develops a more or less marked obstruction, and yet the patient's condition may be entirely satisfactory so far as the infection itself is concerned. The infection may be limited to the field of operation and still be accompanied by obstruction symptoms. If the patient survives, the intestines may liberate themselves in a few days and there is then no further trouble with the passage of bowel contents. However, the condition may become acute and it is not possible to wait for this to relieve itself, and this is where enterostomy seems to be a life-saving procedure. In the last few months he had met with cases in which he felt that the patients would not have recovered without enterostomy. A few days after the obstruction subsided; nothing was passed by the tube which was then removed, and the wound was closed without leakage. Recently, he used this procedure as a prophylactic measure in a case of pelvic abscess of unknown origin. It was necessary to drain the abscess and it seemed that the measures necessary to establish this would cause distention and death unless relief of tension in the bowel was provided for. In that case the procedure was of great value. So far as immediate enterostomy for intestinal obstruction he had always felt that there was a great danger because of the possibility of causing peritonitis. There is no rule more binding on the surgeon than the one not to do an anastomosis in obstruction. If one makes an enterotomy and then closes it up, the patient is submitted to the possibility of fluid and gas causing pressure, as happened in the first case reported by Doctor Flick where there was tension on the sutures, with leakage and peritonitis. The speaker distinctly preferred enterostomy, the opening protected by a piece of omentum.

DR. GEORGE M. DORRANCE said that he had been confronted by cases after appendix lesions with acute obstruction low down in the ileum about six inches above the ileocæcal valve—as in Doctor Flick's last case. He thought if the cæcum could be delivered and a cæcostomy made placing a catheter into the ileum to relieve pressure, it would be desirable. In one case the procedure had worked very well. The catheter may be easily slipped through the ileocæcal valve into the small intestine. In appendiceal cases with obstruction low down he intends to use this procedure, rather than the higher one. It is well known that when these appendiceal cases get a fæcal fistula they get well.

DR. EDWARD T. CROSSAN said that in 1920 Doctor Codman wrote a paper on intestinal obstruction in which he reported twenty-seven cases without a death. In this paper he advocated enterotomy and said he thought it a life-saving procedure. The speaker's own experience has been that it was not worth while. Doctor Codman did an enterotomy in all his cases but in eight it was combined with enterostomy. As to intestinal obstruction following acute appendicitis Doctor Crossan recently tried to separate the adhesions in a case of this type and the following day the patient had an intestinal obstruction and he had to do an enterostomy.

DR. HENRY P. BROWN, JR., said that in view of the fact that the toxic manifestations of obstruction are due to absorption from the bowel, that any method which will empty the bowel of its toxic contents will correspondingly diminish the resulting toxæmia. Evacuating the bowel of toxic contents in acute obstruction has recently been suggested. He had adopted this procedure several times with very gratifying results. In one recent case of acute obstruction of the terminal ileum of twenty-four hours' duration, the patient being quite toxic, after relieving the obstruction, a rubber clamp was placed below the site of the obstruction, and a catheter was sutured in the bowel just above the clamp. After greasing the hands and grasping the first part of the jejunum between the index and middle fingers of the right hand the assistant pulled the entire small gut through the reporter's fingers down to the site of the clamp, thus emptying the bowel of its gas and toxic contents. The catheter was then removed, the opening in the bowel closed, and the abdomen sutured in layers without drainage. Aside from slight post-operative nausea from the anæsthesia, the patient never vomited, the temperature was never above 100, and he made a good recovery. This procedure empties the bowel of its gas and toxic contents more efficaciously than when merely an enterostomy is performed.

DR. ASTLEY P. C. ASHHURST said: *First,* as regards enterotomy for acute intestinal obstruction; about twenty years ago or more Moynihan advocated efforts (during the operation) to secure evacuation above the obstruction by opening the bowel about a foot (30 cm.) or higher above the point of obstruction (after relief of the obstruction), inserting a glass tube and crowding on the tube as much bowel as possible. Moynihan said that upon a tube six inches in length six or ten feet of intestine could readily be drawn, the contents evacuated through this tube, the intestinal opening closed, and the bowel replaced. The speaker has tried this method but never could succeed in getting more than one coil of small intestine upon the tube at one time, nor in securing any evacuation. *Second,* as to *enterostomy* (jejunostomy or ileostomy) at the same time as the original operation, or subsequently because the patient was not doing well: Doctor Ashhurst has never had any success at all with this method, as a secondary operation—the bowel simply did not drain, and the patients died. As a primary operative procedure, he has had one temporary success: by opening the first distended coil of bowel that presented, he saved a woman from immediate

death, but she lived only about four months, never regaining sufficient strength to justify a search for the site of obstruction and closure of the fæcal fistula. It is a good rule in intestinal obstruction never to make the incision in the mid-line or near it, if the abdomen is much distended. In cases with great distention it is safer to make the incision to one side or other, according to the indications, and to do an enterostomy, a cæcostomy or a sigmoidostomy above the site of obstruction, but without any search for the latter. If the patient survives, as many of them will do when the obstruction is in the large bowel, the obstructing lesion may prove amenable to a secondary operation. If one opens in the mid-line, when the abdomen is much distended, one must be prepared to do something to the small intestines when they prolapse. They will become much more distended as soon as they escape, and it will be extremely difficult to replace them. Multiple needle punctures may evacuate enough flatus to enable the surgeon to reduce them, but usually the patient does not survive. When the greatly distended bowel is opened in the presence of acute obstruction it is very difficult to prevent peritonitis unless the bowel is kept outside of the abdomen permanently. Even if the wound in the bowel is carefully sutured and does not leak subsequently, there is very apt to be enough contamination during the operation to produce peritonitis subsequently. This may have been what occurred in Doctor Flick's first patient, the case in which the intestine was closed so nicely, no leakage occurring, but the patient dying of peritonitis all the same.

Dr. John B. Flick said that it was because of the great difference of opinion concerning enterotomy that he had thought it would be worthwhile to report these three cases. Among those who believe in it is Moynihan, who states in his book that no operation for acute obstruction can be considered complete which leaves an overdistended intestine whose function it is to absorb contents of a poisonous nature. He advocated enterotomy and does not seem to fear contamination or peritonitis. All three of the reported cases were acute obstruction. One may have been chronic obstruction but it was acute at the time of operation.

SURGICAL TECHNIC

Dr. Walter G. Elmer read a paper with the above title, for which see page 328.

Dr. Astley P. C. Ashhurst remarked that many of the breaks in technic which Doctor Elmer has suggested may be avoided by foresight. Of course all the dressings and other materials to be used in an operation are supposed to be sterile when they come from the sterilizers; but they should be proved to be so before they are used. Every time the autoclave is put into use at the Episcopal Hospital, and at the Orthopædic Hospital, a package is sent from the centre of the autoclave to the laboratory; and every time the water sterilizer is refilled and the water is sterilized, a sample of the supposedly sterile water is sent to the laboratory; and neither the

gauze, etc., from the autoclave nor the water from the sterilizer is permitted to be used until the laboratory has sent a report that the samples give no bacterial growth on culture media after incubation for forty-eight hours. He regards these precautions as important.

Clean operations should be done early in the day, when possible, leaving the infected cases, such as prostatectomies, operations for pyothorax, etc., until the last. The "suture nurse" should act only as a distributing station, and never as a receiving station. Never let the nurse have any instruments in her hand, except such as she gets from her own table. The instruments which the speaker uses are handled by no one but himself. The nurse hands out from her own table the fresh needles, etc., but when the operator is through with them they are placed in a pan where she cannot reach them. The nurse changes her gown and gloves for every operation, just as the surgeons do. Any blood stains on the sheets under the patient should be covered with something dry (and sterile) as soon as possible, and before anything touches them. Instead of washing his fingers in sterile water, the speaker prefers to use bichloride of mercury solution, because in this way a little bichloride of mercury is carried into the wound each time; before intraperitoneal manipulations, the bichloride may be rinsed off in saline solution. In abdominal surgery there is little chance for the draping sheets, etc., to become displaced, because the patient's position is not changed during the operation. This is not true in fracture surgery because in operating on limbs it is often necessary to move them, and great care is necessary that no unsterile skin area become exposed, and thus permit infection of the wound. With equally careful technic, infection is no more apt to occur in fracture work than in abdominal operations.

Dr. Deforest P. Willard said that he had followed out for years the plan of keeping the wound or the supposedly sterilized surface away from the table by the use of a rubber sheet. He recalled one case in which the technic slipped up and in which he did not use the rubber sheet in which case, obviously, infection developed from the sandbags under the patient. Following an operation on the tendo Achillis the patient was turned over in order to do the bone work on the front part of the foot. Three days later the tendo Achillis wound broke down. The wound on the front of the foot remained clean. Doctor Willard felt sure that the slight amount of blood oozing from the tendo Achillis wound stained the sheet over the sandbag and enough came through to cause the infection. In operations on the extremities the greatest care is taken to see that instruments and sutures do not drag over the skin. The easiest way to protect the wound and sutures from infection is to cover the extremity with a sterilized stockinet. The incision is made through the stockinet and it is sutured to the edge of the wound so that at no time during the operation do the sutures or instruments touch the skin.