

ABDOMINAL AND UTERINE TOLERANCE IN PREGNANT
WOMEN, AS SHOWN BY THE LOW RATE OF MOR-
TALITY UNDER SEVERE LACERATED AND
OTHER WOUNDS THE RESULT OF DIRECT
VIOLENCE.

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We propose in this paper to confine our attention to wounds of the abdomen, and of the abdomen and uterus, directly inflicted, and to discard all cases in which the injury has been mainly or entirely received through the lower pelvis. This will necessarily limit the notice in large degree to cases of laceration, and these have been most frequently and frightfully inflicted by the horns of ruminants, as of the bull, ox, cow, bison, and buffalo, and, as would naturally be supposed, in the largest number by those of the cow. The wives of dairymen are particularly liable to injury in the field and barn-yard, and were all of the gored cases placed upon record, we should be amazed at the variety of their wounds, and the number of their narrow escapes from death, by abdominal, perineal, and other forms of injury. Perhaps in no sphere in life have more extensive lacerations of the abdomen been produced, than those which the country surgeon has had to treat in the wives of farmers, after horn-rips and picket-fence tears, when in advanced pregnancy; the tension and enlargement of the belly favoring the formation of a long wound in extreme cases.

Many unimpregnated women have likewise been injured and escaped death, but the condition of pregnancy changes the prognostic conjecture, and makes the recovery more astonishing, particularly where the foetus has been violently liberated through the rent. When we look into our own experience, as to the producing causes of abortion and miscarriage, particularly in the higher walks of life and in neurotic women, we are amazed to find what trifles have, in some instances, induced expulsive contractions of the uterus. One of my patients, to all appearances a strong, hale woman, had a great abhorrence of tree-worms and caterpillars, and aborted upon two occasions under their influence; once when a caterpillar fell from a tree upon the crown of her bare head, and a

second time, when stopped in the street to have some canker-worms removed from the back of her mantle; on each occasion she experienced a sudden shock, followed at once by the pains of labor. This woman managed to escape such mishaps during eight out of eleven pregnancies, and carried the foetuses to maturity. Another woman, not of delicate build, but living in luxury, fell at once in labor, after lifting down a little boy over three steps in a curve of the stairway that she regarded as unsafe for him to step down. In this case, an increase of abdominal pressure appears to have opened a delicately closed cervix, brought on hemorrhage, and at once excited uterine contractions. In view of such trifling excitants to labor, we are the more astonished to learn, that in a number of instances hale country women have not had their gestation interrupted by severe and extensive lacerations of the abdominal wall, with large protrusion of the intestines, and even with the gravid uterus prolapsed through the wound, but have carried the foetus to its full maturity, and been delivered of it alive and in good condition.

When a pregnant woman falls or is thrown upon the pointed pale of a fence, so that the stake is made to enter and lacerate her abdomen, she may receive a wound equal in extent to any that has been recorded as the result of a horn-rip. As a remarkable instance of such an injury occurring in this country, I quote the following from the experience of the late Dr. James C. Bradbury, of Old Town, Maine, a distinguished surgeon of the State, the case dating back forty years :

Mrs. V., a large and muscular woman, pregnant nearly seven months, fell upon a picket-fence from a platform that gave way under her, when engaged in shaking a rug, the platform resting on the fence. A picket entered her abdomen just below the umbilicus, and produced a transverse laceration, computed to measure twenty inches in length, between the *cristæ ilii*, with a downward curve. The doctor fortunately saw the woman in a few minutes; found a gaping wound six or eight inches wide, the upper lip being folded over the epigastrium, and a large foetus struggling violently *in utero*, but with comparatively little hemorrhage. The patient was placed at once under chloroform, the wound closed by sutures, and additionally secured by adhesive strips, after which she was kept quiet by morphia. The whole wound was apparently about to unite by the first intention, and with an almost entire absence of constitutional disturbance, when the foolish woman, about the sixth day, ate a pretty full meal of indigestible food, after which the wound became of a dark venous color; reopened in its middle third, and the edges sloughed a little, to unite by granulation. About two months after the

accident the woman gave birth to the foetus, by natural, quick, and easy labor,¹

Dr. Hiram Corson, of Montgomery County, Pennsylvania, one of the oldest physicians in the State, reports to me by letter that he was once called to see a woman eight months pregnant, who had been thrown upon the top of a picket-fence by the upsetting of a wagon which was descending a pretty steep hill. He found a wound of three or four inches in length, through the abdominal wall, down to the uterus, which he closed by sutures. When the laceration was nearly healed, the woman fell into labor, and gave birth to a living child without any difficulty.

No doubt many other cases such as these might be found in the private records of our country practitioners, but the two examples serve to show that they have very different nervous systems to deal with, from what we usually find in women brought up in our large cities.

In considering the subject of horn-lacerations of the abdomen, we are obliged to divide it into two heads: one form of injury being confined to the abdominal wall of the pregnant woman, while the other includes both it and the uterus, the latter being the more dangerous of the two casualties, in consequence of the additional risk of the uterine rent, which is of itself the most serious injury of the two. Where a pregnant woman has nearly reached the full term of utero-gestation, when the uterus is in contact with the abdominal wall, and the lower part of the abdominal protrusion gravitates toward a horizontal line, the thrust and tossing motion of the horn is, in nearly all cases, made to inflict a *cœlio-hysterotic* rip. But where the pregnancy is at six or seven months, the protected position of the uterus and the form of the abdomen favor the escape of the former in the character of the injury. The accompanying tabular record presents several very remarkable cases in which not only did the uterus of the pregnant woman only escape being opened by the horn, but the woman also escaped the induction of premature labor as a result of the injury. Some of these casualties have very frightful records, and the results of treatment were scarcely such as must have been looked for by the surgeons in charge; in fact, in some instances the relatives were warned to expect death, when recovery afterward took place.

The most remarkable and interesting of all the varieties of horn-laceration in pregnant women is that which, from its nature, may be classed as *Cæsarcan*, of which the number of examples and the low

¹ Boston Medical and Surgical Journal, 1882, vol. xlv. p. 265.

record of mortality are beyond what might be conjectured. In view of the fact that in but one case of this class was the uterine wound sutured, and in no case was the obstetrical treatment truly aseptic, it is almost incredible that there should have been but four deaths among fourteen subjects; that two of the four dead women should have left children that are now living in the States of New York and Missouri, and that in four cases both the mother and child should have lived.

We have endeavored, in the seven cases where the children lived, to ascertain whether they subsequently died at an early age, or grew to maturity. Five of these children were boys, one was a girl, and the sex of the seventh was not given. One boy lived to be a man over fifty years old; one is now forty-one; a third is nearly twenty-five; a fourth was lost sight of when a lad; the fifth died at nine months; and the girl is now ten years old. Four of the seven mothers recovered, and three are known to have survived a number of years; in fact, one now lives, after a period of forty-one years, and her son likewise.

Abdominal and uterine tolerance will be found at their maximum in strong, healthy country women, who have not been subjected to the exhausting pains of labor, and whose nervous organizations fit them for enduring the shock of injury; and at the minimum in the rachitic or coxalgic dwarf, already weakened by labor, and enervated by deforming and stunting bone disease. Subject the latter to the method of horn-rip delivery, and we should soon learn how important to success is the previous good health of the woman. The suturing of the uterine wound is far more important to success in the case of a rachitic dwarf than in that of a strong, muscular woman, for the simple reason that uterine contractions cannot be depended upon for their office in closing the wound in the uterus and keeping it shut, except in cases where the muscles of the organ are in an active, and not an exhausted condition.

It has been objected, in Germany, that American Cæsarean operators have adopted the plan of frequently making the uterine incision upon a passive organ—that is, one in which there has not commenced any of the contractions of labor—and that this endangers the life of the patient, by inducing muscular atony, leading to hemorrhage. Certainly the results in horn-rip cases, and in several operations witnessed by me in this city, would teach quite the contrary. Opening the inactive uterus in Philadelphia has had the effect, in every instance, of inducing immediate contractions of the organ, favoring the separation of the placenta and the prevention of hemorrhage. In two instances in

Europe it was thought necessary to convert a proposed Säger into a Porro operation, in order to save the woman from death by hemorrhage; but in these cases, labor was in progress before the operation commenced. As a general rule, cases in which the placenta is found under the line of incision give rise to the larger amounts of hemorrhage; but this is not always the case, for I have seen quite the contrary; the largest measure of loss witnessed being from an incised venous sinus, where the placenta was attached postero-laterally.

A cow is said, in common language, to have "hooked" a woman, an expression which applies to the motion of her head, intended to gore and then toss upward with the horn. If the weapon is very sharp, and the motion rapid, the parts lacerated may present an incised appearance, and union by first intention may take place after the wound has been sutured. Perfect and entire union, as after a knife-incision, throughout the whole length of the laceration, and within a few days, will very rarely follow the casualty. Points of weakness in union are apt to result, and herinæ as a final disability have not been uncommon. Wounds of the intestines have been very rarely discovered after horn-lacerations in India, where they have been quite common in the experience of some British surgeons, the native buffalo being much given to using his horns upon the herdsman and boys who drive them from pasture. This rule also applies in the cases of abdominal rip in pregnant women, and for two reasons—viz., the horn seldom comes in contact with an intestine where the woman is far advanced in pregnancy; and where she is in the early months, it will rarely perforate or tear the slippery outer coat of the yielding, movable bowel. In some cases on record, the intestines have no doubt been wounded, as the symptoms and early death of the women would appear to indicate. Where there is no such complication, the teachings of history would lead us to give a favorable prognosis, although our fears might induce us to look on the dark side. The lacerations are usually in an oblique direction; sometimes they are transverse; but it is very rare to find them in the direction of the *linea alba*.

For the same reason that the intestines are rarely torn, we may find a mural laceration, even of several inches in length, which has not opened the peritoneal cavity, the peritoneum preserving its integrity and the small intestine showing through it. In another case, we may find that the horn has cut a long furrow, and has then made a penetrating rip of a few inches, with eventration of omentum and intestines.

About twenty years ago, Mrs. Capron, of Chicago, then a missionary

in india, was called to see the wife of a Brahmin lawyer, at the time five months pregnant, who had received a horn-rip from a driving-buffalo, such as are used in the place of horses in that country. The wound was directly beneath the umbilicus, and about six inches in length, the gash extending down to the peritoneum, but not through it. Strips of adhesive plaster sufficed to keep the wound closed, and to secure primary union without suppuration; the woman carried her foetus to maturity, and she and her boy were alive long afterward.

Contused horn-wounds of the abdomen, without laceration of surface, may be much more serious in their effects than where the parts have been torn through; and this is particularly the case where the placenta is attached to the anterior section of the uterine wall and is beneath the point struck by the horn. In such a casualty the placenta may be centrally detached, the woman brought to bed with a dead foetus, and her life endangered by hemorrhage from the placental site.¹

Horn perforations of the abdomen, or the abdomen and uterus, without extention by subsequent laceration, are very rare, for in such a casualty the animal is usually passive, and the woman is thrown upon his horn, as in the case of the production of a stake-wound. Even a horn-perforation may give exit to the hand of the foetus, and require that labor should be induced as in Case 8 of table.

An interesting case of perforation by a wooden pitchfork was reported in the *Journal de Chirurgie* of Malgaigne, for December, 1846, by Dr. C. Czajenski, the subject being a healthy woman, twenty-seven years old, and pregnant five and a half months. The accident took place on July 18, 1845, in the Commune of Château Loiret, and occurred in this manner. The woman chased a cow, and designed to strike her with the handle of a two-pronged oak fork, which she held by the tine end. The end of the handle not quite reaching the animal, fell to the ground, and she in her impetuosity stumbled over the prong-end, and one tine was forced into her abdomen and uterus, through the edge of the placenta, and into the lower angle of the left shoulder-blade of the foetus. The fork entered about two and three-quarters inches above the pubes, and near the external border of the right rectus abdominis muscle, and its withdrawal was followed by an evacuation of liquor amnii, slightly streaked with blood. Four days later she gave birth to a dead male foetus, which presented by the breech, and there was no marked hemorrhage. After a long and serious illness this woman finally recovered; the wound of the abdomen became fistulous, and

¹See the Cummins case, in Dublin Quarterly Journal, 1858, xxxv. pp. 228-231.

did not close for four months; an abscess opened into it and discharged freely, as well as a small fecal fistula, through which seeds of currants, gas and fluid having a fecal odor escaped. This fecal fistula did not make its appearance until eighteen days after the accident, and followed an attack of diarrhoea lasting over two days, with ten or twelve passages in twenty-four hours; the uterine wound is believed to have healed in a few days. The slight injury of the intestine is probably due to the fact that the fork was of oak; had it been of hickory, with the polish of such instruments used here, the bowel would most likely have been passed by. It is possible, however, that the intestinal lesion was purely secondary. *

It would appear to be historically established that an incised wound of violence in the uterus is more likely to end fatally than a laceration inflicted by a smooth, rapidly driven weapon; and that the most dangerous part of the organ to be opened, is its fundus. Hence sword-thrusts of this region have generally proved fatal, and in most instances rapidly, by hemorrhage. Of the six self-inflicted Cæsarean sections upon record, the only one that ended in death was a fundal operation, and the woman died of hemorrhage.

Peritonitis of a fatal character, under the best care, is apt to follow an infliction of violence made with intent to kill by knife, dirk or rapier. An interesting illustration of this may be found recorded in the *Bulletin et Mémoires de la Société de Chirurgie de Paris*, 1887, N. S. viii. pp. 627-638, by Dr. Schwarz, of which the following is a condensation; A seamstress, of twenty-two years, was admitted to the Hôpital Baujon, Paris, on August 18, 1887, with a knife-wound of the abdomen, received the evening before, having protruding through the incision the two feet of a foetus, of between six and seven months, and about a yard of small intestine. The wound was linear, to the left of the median line, directed obliquely from below upward and from right to left, near the umbilicus, and about two and a half inches in length. The dressing of the parts was commenced about seven hours after the receipt of the injury, the temperature of the woman being normal, pulse frequent but not small, and condition fair. The intestines had not been wounded. The parts were washed with hot boiled water, and with the liquor of Van Swieten (liq. potass. parmandan., 1 : 1000). The foetal head being held *in utero*, the wound of the organ was extended for its liberation. The opening in the uterus was transverse, between the cornua, and the placenta was not wounded; the abdominal cavity contained a large quantity of blood-clots, which were washed out with hot boiled water,

and the uterus was treated likewise; after which it was closed with twelve catgut sutures, and the abdomen with ten metallic ones. The patient died of peritonitis in four and a half days, with abundant intestinal adhesions; and some sero-purulent fluid was found in the abdominal cavity. The uterine and abdominal wounds were fully united, and the condition of the uterine cavity was normal. The important question is: Why did this woman have a fatal peritonitis when so large a proportion of the horn-ripped subjects escaped? What influence does the moral and mental shock of such cases, aided by the blood-loss, exert in determining an attack of peritonitis? Did the liquor of Van Swieten start the inflammation? It has been known to do this.

We note a still more unaccountable result. At the meeting of the Anatomical Society of Paris, in April, 1838, Dr. Laborie exhibited the uterus of a woman who had died from the effects of a knife-wound when pregnant five and a half months. The knife had a wide blade, which penetrated the uterus and evacuated the amniotic fluid, as recognized by its peculiar odor. Ten hours after the injury the woman aborted, and grave symptoms of prostration appeared, but without those of peritonitis; and in two days after the stabbing she died. At the anterior superior part of the uterus was found a small wound penetrating its cavity, and there were slight traces of peritoneal inflammation; there were no other organs diseased to account for the death.¹ In cases such as this there is both a moral and a physical shock, acting as factors in the production of death, as stab wounds which have proved fatal have been certainly less severe in appearance than horn and stake wounds from which pregnant women have recovered.

Illegitimacy in the pregnancy, especially in communities where the moral tone of society strongly condemns it, has also a depressing effect in many cases of knife-wounding of the uterus at the hands of another, aside from the extent of the injury. The mind appears in some cases to have more to do with the cause of death than the body; and every surgeon of large hospital experience has had to deplore the effects of emotional depression in rendering injuries fatal that should otherwise have resulted in recovery. In horn-rip cases of great gravity, as in No. 1 of the table, the women have, on the contrary, shown very marked endurance and hopefulness in some instances, and have even encouraged the surgeon to look for their recovery almost against his own convictions.

Gunshot wounds of the abdomen and gravid uterus will generally

¹ Bulletin de la Société Anatomique de Paris, 1838, tome xiii, p. 38.



destroy the life of the foetus and lead to its expulsion; but there are exceptions to the first effect; On November 16, 1733, a pregnant woman of thirty, and about a week from her time, was shot, in Bischoffweiler, Germany, by a drunken man with a pistol loaded with small balls, one of which wounded the foetus near the right clavicle. The woman was thrown into labor and bore a living child, which, when a week old, had the ball, which was of the size of a pea, excised. The woman recovered, although wounded, also, in her shoulder, side and hip.¹ As the uterus is not a vital organ, a bullet may pass through it and the foetus and bury itself in the lumbar muscles of the woman without producing her death; and this result will be the more likely to follow if she knows that the shot was purely accidental. The balls of very small revolvers are the least dangerous, and particularly so where the body of the foetus arrests the transit of the bullet. Two examples in point are here given:

Case 1. On July 4, 1876, a Swede of thirty-eight, pregnant, near her full term, was riding in a farmer's wagon, in Sibley County, Minnesota, by the side of a young man who, in carelessly handling a pistol, managed to discharge it when directed toward the side of her abdomen. The ball entered at a point two inches above the right ilium and a little back of the anterior superior spinous process, and passed downward, forward, and inward into the body of the foetus. A little shock was felt, but no serious symptoms followed. In forty hours the woman gave birth to a dead foetus by a labor in all respects normal, except that there was some nervous prostration, and this was followed by a complete recovery.²

Case 2. On June 20, 1879, a colored primipara of eighteen, then six months pregnant, was wounded accidentally in the abdomen by a pistol-ball weighing one hundred and thirty-six grains, which traversed from below upward, by a rebound shot fired from horseback at a distance of sixty yards, the woman being hidden from view by some bushes. The ball entered about two inches above the anterior superior spinous process of the ilium and ranged upward through uterus and foetus to bury itself somewhere in the back part of the woman. Labor came on in less than twenty-four hours, and the foetus, placenta, and membranes were expelled simultaneously, with very little loss of blood.

¹ "Uterum Gravidæ una cum Foetu Vulneratum," J. Martino Reichard. Argentor, 1735.

² Reported by Dr. Franklin Staples, of Winona, Minn. New York Medical Record, 1876, vol. ii. p. 595.

The ball entered the foetus just below the left scapula, ranged diagonally through the trunk, and made its exit from the right hip. Peritonitis followed, and the woman made a narrow escape from death. She menstruated in four weeks and was well in a month. The ball was not found. From the small amount of liquor amnii lost in her labor it was thought to have drained into the abdominal cavity through the wound in the uterus.¹

Ante-partum infanticide by abdomino-uterine puncture, or incision, inflicted by the woman herself, is of very rare occurrence; and it is fortunate that the illegitimately impregnated subject does not know with what degree of safety to herself a fatal puncture may be inflicted upon her foetus when in the last weeks of gestation. The following case, furnished me by Prof. Barton Cooke Hirst, of the University of Pennsylvania, shows the measure of tolerance possible under such an injury. It occurred some eighteen months ago:

"A young girl, illegitimately impregnated for the first time, was delivered in the Maternity Hospital of a dead infant at term. The child was removed at once for burial and no cause noted for the still birth. It was remarked that the girl had some pus issuing from her umbilicus after delivery; but she could or would give no explanation for it, and stated that it had been going on for some time. It gradually ceased, and the patient left the hospital in good condition. After her departure one of her intimates among the patients volunteered the information to a nurse that about two weeks before delivery the girl had driven a long hat-pin through her navel to a great depth with the avowed intention of destroying her child. She had suffered great pain afterward, which, however, she concealed." This was, no doubt, due to a local traumatic peritonitis.

Ante-partum infanticide by abdomino-uterine incision under a self-infliction is a much more desperate procedure than that accomplished by a deep puncture as just described. A noted instance of this form of foeticide will be found in *The American Journal of the Medical Sciences* for February, 1888, page 156. In this case, dating March 28, 1886, a woman, living near Viterbo, Italy, single, and twenty-three years of age, made an incision of four and three-quarters inches in length in the middle of her right iliac region and through the uterine wall, killed the foetus by wounds in its chest and abdomen before extracting it, and finished by cutting off its head. This woman

¹ Reported by Dr. George B. Hays, Plaquemines Parish, La. *New Orleans Medical and Surgical Journal*, October, 1879, p. 423.

recovered completely in forty-eight days, and was then under police restraint as an infanticide. The infant was proved by necroscopic examination to have never breathed. The woman had denied her pregnancy, and took these steps to prove the alleged falsity of the charges made against her.

SPECIAL REMARKS.—Children delivered by the Cæsarean section have sometimes been named "Macduff" under an impression that this hero of Shakespeare was "ripped out" of his mother. That such a casualty may have happened to her is quite possible, in view of the fact that several other women have suffered the same form of injury, whose sons thus liberated have lived to mature age. But that Mrs. Macduff was thus delivered is based upon a very questionable dialogue uttered under conditions of a highly improbable character, and first published more than three centuries after the occurrence by John de Fordun, followed by Hector Boece, two Scotch historians who are not much credited, and the second of whom is commonly estimated as "mendacious." John de Fordun was a priest of the church of Fordun in 1377, and Hector Boece, was born in Dundee about the year 1470. Raphael Holinshed copied their statements, and from his work of 1577 the bard of Ayon obtained the story, which, with a poet's license, he slightly altered.

Because Macduff might very readily have been "ripped out" of his mother's womb is no proof that he was thus hurried into the world, and critics of the present day in Scotland are disposed to regard the whole tale as a fabrication. Even the proof that Macduff was the one who killed Macbeth rests much more on inference than upon any array of historical facts.

Concessions which were granted by the Crown to the Macduff descendants for some special act would indicate that the death of the usurper may have been placed to the credit of the head of the family. Conjecture may give the horn-Cæsarean operation an age equal to that of the pyramids of Egypt, but facts and evidence make it much more recent in years.

Tabular record, Case 1. The abdominal laceration of 1530 is one of six horn-ripped cases in which the uterus escaped injury. The women did not in any instance miscarry, and all are believed to have carried their children to full maturity, as five of them are known to have done. The report of Case 1 rests upon the authority of the celebrated classical scholar and antiquarian, Martin Crusius, who was born in Grebern in 1526, and died in 1607, having been contemporaneous

Table of Animal Horn-rips of the Abdomen and of

No.	Date.	Locality.	Physician in charge after the casualty.	Name, age or social position of the woman.	Animal inflicting the laceration.	Character of the laceration.
1	Sept, 1530	Owa, Germany.	Jno. Hamelius, public bath-house keeper.	Cath. Jaeger, wife of a herdsman, pregnant 6 months.	Bull	<i>Abdominal.</i> Uterus and intestines protruding and soiled; 19 stitches inserted.
2	Aug. 29, 1647	Zaandam, Holland.	Drs. Ireton and Jano Bernhard.	Mrs. Egh, wife of a farmer; strong and active.	Bull	<i>Abdominal and uterine.</i> Wound of abdomen 12 finger-breadths long. Gored in perineum; bladder torn; child expelled through rent.
3	Oct. 20, 1779	Offdillen, Dillenberg, Germany.	Dr. Frederick Augustus Fritse.	Mrs. Schullers a multipara; poor; of delicate build, but healthy.	Ox	<i>Abdominal and uterine.</i> Wound in right hypochondrium L-shaped; arm protruding; rent enlarged 3 inches by the knife.
4	June 25, 1785	Province of Guypuscoa, Spain.	Drs. Di Zubeldia and Monaco.	Marie Gratien a robust multipara.	Ox	<i>Abdominal and uterine.</i> Wound transverse; 8 inches.
5	July 30, 1789	Caudebec, Lower Seine France.	Drs. Lechaptois and Lair-Corigny.	M'rie Brument a multipara of 36.	Bull	<i>Abdominal and uterine.</i> Wound transverse; 10 inches in hypogastric region.
6	Nov. 30, 1805	Villanova, Lower Po, Italy.	Dr. Francesco Duo.	Woman, 35, far advanced in pregnancy.	Cow	<i>Abdominal and uterine.</i> Two wounds; elbow protruding in left hypochondrium. Wound enlarged by knife.
7	1830 or 1832	China, Nuevo Leon, Mexico.	Patient sewed up her own abdomen and dressed it.	Señora Juana Gonzales de Cavazos, mother of two or three.	Cow	<i>Abdominal and uterine.</i> Child immediately delivered. She was engaged in milking.
8	June 12, 1834	Madras, India.	Surgeon G. G. Spillsbury.	Wife of a Sepoy.	Buffalo of India	<i>Abdominal and uterine.</i> Punctured transverse wound above pubes, 2 inches long; hand protruding.
9	Edinburgh, Scotland.	Dr. John Thatcher.	Cow	<i>Abdominal and uterine.</i>
10	June 27, 1850	City of Mexico.	Prof. Miguel Jimenez.	Señora Jacinta Guzman, young and strong.	Cow	<i>Abdominal and uterine.</i> Wound 8 inches; enlarged a little by the knife; breech presented. Placenta delivered per vaginam.
11	Summer of 1852	Franklin Co., Nebraska.	The Pawnee Indians.	A Pawnee squaw, of about 30.	Bison bull	<i>Abdominal and uterine.</i> Fœtus extracted by the horn.

Result to woman.	Result to child.	Remarks.	References.
Recovered	Carried three months; girl, Annie, lived to age of eight years.	Woman died May 10, 1559, having survived over 28 years.	Annals Suevici, by Martin Crusius Francof, 1596, Part iii., Lib., xi., cap. 5, p. 614. Disputationes Chirurg. Select. Albertus von Haller, v. 5. 1756, p. 120. art. xix.
Died	Lived. Boy, Jacob, bruised. Died May 23, 1648.	Woman vomited blood and fecal matter; lived forty-one hours. Husband also killed. Casualty commemorated by a painting in a church at Zaandam.	Thomæ Bartolini, "Historiarum Anatomicarum Rariorum." Centuriæ i. et ii., Hafniæ, 1654, p. 180-184. Henri van Roonhuyzen's Letter, 1662, Amsterdam.
Recovered	Dead. A six months' foetus.	Wound healed in five weeks. Woman died from hemorrhage after delivery on April 28, 1781; blood in abdominal cavity, but uterus not ruptured.	Schmucher, Vermichte Chirurgische Schriften, Band iii., 1782, S. 59. London Med. Journ., vol. ii., 1790, p. 148-160. Journ. de Chir., par M. Desault, Paris, 1791, p. 322-326. Journ. de Méd. et de Chir. Prat., vol. vii., 1836, p. 417.
Recovered	Dead. In ninth month. Killed.	Woman had a small hernia; bore two children at later periods.	Journ. de Chirurgie, par M. Desault, Paris 1791, p. 322-326.
Recovered	Died in eight hours; an eight months' foetus.	Woman had a small hernia; survived twenty years.	Recueil Periodique de la Soc. de Méd. de Paris, tome v. p. 70-81. Journ. de Méd. et de Chirurgie Prat., tome vii., 1836, p. 417.
Recovered	Died. Killed by a contusion of the chest.	Woman had a large hernia in the line of the cicatrix.	Giornale di Medicina, Pavia, 1814. Sem. ii. p. 37.
Recovered	Lived. Boy named Librado; lived to be over fifty years old.	Woman of great nerve and of a masculine character. Bore three children at later periods; all living in September, 1891.	Communicated by Rr. Federico Semeleder, Mexico; attested by Narciso Davila, Senator for Nuevo Leon, and Juan de Dios Villalon, Paymaster Treas. Dept., Sept. 23, 1891.
Recovered	Died. Injured in neck and shoulder; at term, delivered per vaginam.	Woman was riding; buffalo stumbled and fell; she was pitched upon the horn. Labor excited artificially.	Trans. Med. Phys. Soc., Calcutta, 1835, vol. vii. part. 2.
Recovered	Lived.	Woman gored in King's Park — then a pasture ground.	Edinburgh Monthly Journ. Med. Sci., July, 1850, p. 88.
Recovered	Lived. A boy; near term; uninjured; cried lustily. A lawyer in September, 1891.	Woman had a hernia in the cicatrix; was alive in September, 1891. Married a second time.	American Journ. Obstetrics, Oct. 1887, p. 1037. Private communications of Professor Semeleder and others in 1891.
Recovered	Dead. Killed by a horn-thrust.	Woman seen alive and well by G. E. Powell at a later visit.	Communicated by Dr. Geo. E. Powell, La Crosse, Wis., who saw the casualty; American Journ. Obstetrics, Oct. 1887.

Table of Animal Horn-rips of the Abdomen and of

	Date.	Locality.	Physician in charge after the casualty.	Name, age, or social position of the woman.	Animal inflicting the laceration.	Character of the laceration.
12	June 5, 1853	Bloomington, Illinois.	Dr. A. H. Luce.	Mrs. John B. Thrasher, 6 months pregnant.	Cow	<i>Abdominal.</i> Wound transverse, 11 inches in length.
13	Summer of 1860	Waterloo, Monroe Co., Illinois.	Dr. Alphonso Wetmore.	Farmer's wife about 30, strong and muscular.	Cow	<i>Abdominal.</i> Six months pregnant; wound oblique and irregular in left hypochondrium to below the umbilicus; omentum and intestines protruding.
14	Feb. 25, 1861	Guntoor, India.	Mr. Thomas Crowdace.	Uckamah, 26, 6th month of pregnancy; a pauper Hindoo.	Buffalo of India.	<i>Abdominal.</i> Laceration by side of umbilicus 1½ inches long; 19 inches of intestine protruding.
15	April 5, 1867	West Point, New York.	Dr. E. N. Marsh U. S. Army.	Mrs. F., 42, mother of 8; in 8th month of pregnancy.	Cow	<i>Abdominal and uterine.</i> Wound of abdomen 5 inches long, from umbilicus outward and downward; several feet of intestines protruding uterus partly inverted through the rent.
16	Last week in June, 1867	Tlilapam, near Orizaba, Mexico.	Dr. Manuel Maria Fernandez.	Maria Martina Crescencia de la Cruz, 26; an Indian fruit-seller.	Bull	<i>Abdominal and uterine.</i> Wound in median line. Fœtus at once delivered, and found by side of mother.
17	June 27, 1876	Van Buren, Indiana.	Drs. L. and E. J. Corey.	Wife of farmer, 35; strong; weight 135 lbs.; 10 weeks pregnant.	Cow	<i>Abdominal.</i> Wound 5 inches, obliquely upward and outward from pubes; omentum wounded, uterus not.
18	Nov. 11, 1881	Pamplona, Navarra, Spain.	Drs. Cabezu and Antonio Martin Ayuso.	Servant, 25; in good condition; 6 months pregnant.	Ox	<i>Abdominal.</i> Wound in right inguinal region 3½ inches long; intestinal eventration size of adult head, and soiled with stable manure.
19	Nov. 16, 1881	Billings, S. W. Missouri.	Dr. Joseph Z. Scott.	Mrs. Piskulla, 8 para, near full term.	Ox	<i>Abdominal and uterine.</i> wound from anterior superior spinous process to umbilicus.
20	April 1, 1888	Celaya, State of Guajuato, Mexico	There were three surgeons in charge of the wounded, who were computed at several hundred; and the dead were removed with little examination.	Not Stated.	Fighting Bull	<i>Abdominal and uterine.</i>

Result to woman.	Result to Child.	Remarks.	References.
Recovered	Carried 98 days longer and born alive.	Woman sixty-five days under medical attention; was delivered on September 11, 1853.	Communicated by Dr. Wm. A. Elder, of Bloomington, Dec. 9, 1890.
Recovered	Carried to maturity and born alive.	Uterus presented contused spots. Abdomen sutured with a darning needle and black thread, after intestines were washed free from dirt and returned.	Communicated by Dr. Wetmore, Jan. 9, 1886.
Recovered	Carried no doubt to maturity.	Woman in hospital twenty-five days. Fœtal heart-sounds distinctly heard at time of discharge.	Madras Quarterly Journal of Med. Sci., vol. vii., 1863, p. 409.
Died	Lived. Grew to manhood, and probably is alive now.	Woman never rallied from the shock, and died in an hour and a half. Her clothes were not torn.	Medical Record, New York, vol. ii., May 15, 1867, p. 148. Communication of Dr. Marsh. Nov. 1888.
Recovered	Lived. Boy, named "Diosdado;" was often seen with his mother in Orizaba.	Woman injured on way to market her fruit. Abdomen and uterus both sutured with silk. Woman lived in good health some twenty years.	Communicated through Prof. Federico Semeleder, of City of Mexico, by Dr. Juan Kremser, of Orizaba, Sept. 1891.
Recovered	Carried to maturity of pregnancy, 202 days, Aug. 18, 1876. Mother and girl well in May, 1878.	The omentum, most of the small intestine, ascending transverse, and descending colon, with the pyloric end of the stomach, protruding.	American Practitioner, vol. xviii., 1878, p. 151-154.
Recovered	Carried to maturity, and born alive.	Wound treated aseptically under chloroform; required four hours in restoring intestines and dressing; healed in sixty days. Went to a Maternity to be delivered.	La Clinica Navarra, Feb 17, No. 5, 1888, Feb. 27, March 4, Nos. 6 and 7, 1888.
Died	Lived. A girl; was alive and well in December 1889.	Child was extruded through the wound in half an hour; placenta extracted through it. Woman died of shock and hemorrhage in fifteen hours after injury.	Medical Age, Detroit, vol. iii., Aug. 10, 1885, No. 15, p. 341. Communicated by Dr. Scott, Dec. 16, 1887.
Died at once	Died.	The woman was far advanced in pregnancy, and was at a bull-fight. The building took fire, the arena was broken, the bulls encountered the crowd, and the general <i>melée</i> cost the lives of nearly a hundred people.	Communicated by Professor Federico Semeleder, April 28, 1891, and Nov. 24, 1891.

with the injured woman after the accident until he reached the age of thirty-three years. Not having been educated in medicine, his Latin account of the case is somewhat confusing, but enough can be learned from it to give its true character, and establish the fact that it is one of the most remarkable recoveries in history, comparing favorably with the picket-laceration under the care of Dr. Bradbury already given. We find that in the dressing of the wound, the barber-surgeon washed the everted parts free from mud with warm milk, and placed the patient with her feet elevated above the level of her head to favor the replacement. She is represented as having been of remarkable nerve and endurance. Crusius as a historical writer bears a high reputation, and his works are scarce and costly.

Case 2 of table differs from the above in the fact that the uterus was torn open, and the foetus tossed out. The woman having been twice gored, and by the horns of a young bull, was more severely injured internally than has been the case with the average of horn-ripped women torn open by the longer and thinner horns of the cow. Although her intestines were thought not to have been lacerated, she had stercoraceous and bloody emesis, and bled from the abdominal wound for twelve hours. The case is well authenticated in Holland. Zaandam is but a few miles from Amsterdam, across the Y.

Case 7 of table. This being here reported for the first time, is given in full:

“About the year 1830 or 1832, Mrs. Juana Gonzalez de Cavazos, living in the small town of China, State of Nuevo Leon, republic of Mexico, being pregnant, went to milk a cow, as she was accustomed to do every day; the animal gave her a horn-thrust that ripped open her abdomen and womb to such an extent that a male child was immediately expelled through the wound. This was the lady's third or fourth child, and was given the name of *Liberado* (the liberated). He lived over fifty years.

“Mrs. Gonzalez de Cavazos belonged to a family of Spanish blood; lived in good circumstances, and was remarkable for her masculine character and fortitude, of which she had given other proofs besides the following. When the people of the house, knowing of her accident, among them two grown daughters, came running and crying, Mrs. Cavazos asked for brandy to wash her wound, sewed up the rent, and walked by herself to her bedroom.

“We received these facts from the señora herself, who, after this accident, had three more children, who are still alive. There live in

the town of China several persons who were eye-witnesses of the event, and have related and confirmed it to us, with all the particulars we have mentioned. We are both distant relatives of Señora Cavazos.

"We make this statement, and sign it at the request of Dr. Semeleder, in the City of Mexico, Federal District, on the twenty-third day of September, 1891.

"NARCISO DAVILA, Senator for the State of Nuevo Leon.

"JUAN DE DIOS VILLALON, paymaster of the first class in the Treasury Department.

Case 16 of table. This is also reported for the first time, and is the third Cæsarean horn-rip of Mexico which resulted favorably to mother and son :

"Maria Martina Crescencia, twenty-six years old, wife of Pablo de la Cruz, both Indians, living in a small village called Tlilapam, inhabited almost exclusively by Indians, half a league beyond the hacienda of Jalapilla, which is near Orizaba ; being the mother of several children, and in her eighth month of pregnancy, was, during the last week of June, 1867, on the fields of said hacienda, going to Orizaba to sell a basket of fruit, about eight o'clock in the morning, assaulted by a bull, who ripped open her abdomen in the median line, and her womb, also, so that when the mother fell to the ground, next to her and on her right side the child was found lying. Mother and child were taken to a straw hut near by, and a few minutes later D. Manuel Maria Fernandez, my friend, passed by. He extracted the placenta through the rent, washed the woman with water, and sewed her wounds (abdomen and womb) with red silk, not disinfected, that was on hand, and ten days afterward the woman walked home.

"The baby was baptized immediately by the name of *Diosdato* (Godgiven) de la Cruz. The Indian woman lived in health some twenty years longer, taking her fruit for sale to Orizaba as before, where she used to sit on one of the corners of the fourth principal street, generally accompanied by her boy, Diosdato, and I saw her often at her place.

"The accident was related to me by Don José Manuel Eizaguirre, senior of the apothecaries of the State of Vera Cruz, and by other persons—among them, in 1870, by Don Augustin Rojas, watchman of the above-named hacienda, who was an eye-witness of the accident, as he arrived just in time to frighten away the midwife-bull, who was about to attack the poor woman a second time.

“Don José Manuel Eizaguirre is still alive, and in possession of all his intellectual faculties; he, as well as Don Agustín Rojas, when I had read to them the present account, declared themselves willing to be produced as witnesses.

“DR. JUAN KREMSER, Orizaba.”

Case 20 of table. All efforts made have failed to obtain particulars as to the exact character of the injuries inflicted by the bull upon this woman, who was one of the crowd of panic-stricken persons endeavoring to escape. So many were hurt that the three physicians of the town were engaged for a number of hours in attending to them, and little notice could be taken of those already dead. One statement makes the killed nearly three hundred, and is to the effect that they were carried away in wagons to be buried.

NATURAL DEDUCTIONS—The surgical world has been long in error as to the proper measure of danger to be encountered in the Cæsarean operation, and had the horn-rip cases of this paper been collected twenty years ago, down to No. 17 inclusive, it must have much surprised the operators of Europe and America to consider their results in contrast with the best work done under the knife. The much better results now attained by the obstetric surgeon, particularly in Germany and Austria, has a tendency to diminish the measure of our surprise at those recorded of the work of horned ruminants; but we are led even now to ask ourselves two very important questions, viz. : 1. Why did so much larger a proportion of women recover after the horn-Cæsarean rip than after a delivery by the knife, under the old method of operating that prevailed up to the year 1876? 2. Was it the mode of operating with the knife, the condition of the subject at the time of her delivery, or both in combination, that made the difference of results? As we must admit that the knife is much the better instrument of the two, and is capable of performing its work with much less shock to the system, we must also admit that an operation before labor is likely to be much better borne by the woman than in the state of exhaustion produced by its long continuance. We believe that the secret of success in horn-ripped and other lacerated cases lies in the fact that the subjects were healthy and in good physical condition when forced to endure the shock of a violent abdominal injury. Had one of these women been already under the effects of labor-exhaustion, her death would, no doubt, have followed.

The labor and time expended in collecting together the cases of injury presented in this paper will have been spent in vain, if they are

to be regarded simply in the light of marvels or curiosities in obstetrical literature. They were certainly not collected as such, but to establish indisputably certain points of belief long held by the writer, and repeatedly contended for: that the Cæsarean operation should not be regarded *per se* as a very dangerous surgical procedure, and should not be held in the dread with which it was long contemplated, and which was a potent factor in forcing it to assume a character which properly belonged to its performance as a "last hope." I have also believed for the past eleven years, and am confirmed in the opinion by many tests made by Philadelphia operators during this period, that the cases must be very exceptional in which it will not be safer to the woman to have her operation performed shortly before labor than after it has begun, unless, in the latter event, very little time is lost in preparation. Certainly the Mexican record of Cæsarean casualties teaches the value of ante-partum cœlio-hysterotomy. Under the knife, Mexico has had one *old* Cæsarean operation (1877)—woman saved, child dead; and one Porro operation (1884)—woman lost, and child saved. The woman lost was a rhachitic, deaf and dumb, dwarf, and died in twenty-eight hours from shock.

In ante-partum Cæsarean operations it may be well to anticipate any possible risk of uterine quiescence by giving a hypodermic injection of ergotin half an hour before the operation is to be commenced. Second operations on the same subjects are rarely fatal if well managed, but the dangers of hemorrhage from the placenta presenting in the line of incision are increased because of utero-abdominal adhesions leading to atony; and this risk will not be entirely avoided, even if the woman is fully in labor. History, however, shows that the danger is rarely insurmountable, and that women have recovered after as many as four,¹ and even six² cœlio-hysterotomies, although no uterine sutures were used. Since the introduction of the Säger method, as many as three operations have been performed upon the same woman, with safety to her and the three children.

¹ Frau Adametz—three out of four children saved. (*Neue Zeitschrift für Geburtsskunde* vol. v., 1837.)

² Madam Godard, of Menil, under Dr. N. Guillet, of Milly. She died undelivered in a seventh labor, after the death of Dr. Guillet. (*Roonhuyzen's Medico-Chirurgical Observations*, 1662.)