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OPERATIVE ADAPTATION WITH CERCLAGE IN TRAUMATIC RUPTURE OF THE SYMPHYSIS

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Operative treatment of rupture of the symphysis is by no means a new procedure. Despite this, the so-called pelvic sling method is most commonly used and sometimes preceded by more or less complicated reposition or operative maneuvers (Theiss 1964, Böttger et al. 1965, Holdsworth 1969, and others).

The purpose of using a pelvic sling or a non-elastic bandage is to obtain a reduction of the pelvis. The patient must be immobilized until some healing can be expected, which usually requires between 6 and 10 weeks. This method is of great disadvantage to the patient, however, as it is very uncomfortable to remain in this position. Furthermore, the risk of decubital ulcers, thromboses, as well as hygienic inconveniences are obvious drawbacks. In the long run the prognosis by this method is good but it is necessary to calculate a period of six months to one year before the patient can begin work (Bürkle de la Camp & Rostock 1955). There are cases which never will regain good stability.

During 1960-1965, nine cases of traumatic rupture of the symphysis were subjected to surgery at the Bone and Joint Department of Sahlgrenska Sjukhuset. In one case the injury was limited to this particular part, but in most of the cases it also involved extensive pelvic lesions and in some cases extensive abdominal traumata.

In previous reports the operative technique included drill holes through which a wire loop was drawn and then applied around the symphysis. However, the wire as a rule cut through after a short time and, furthermore, there was a risk of osteitis developing in the pubic bones (according to Dreschner up to 50 per cent). Another meth-

od was osteosynthesis with a metal plate and screws, which, however, did not give a strong enough fixation. The screws loosened from the soft bone. Consequently, there is a certain reluctance to use surgery for these injuries.

OPERATIVE TECHNIQUE

The cases reported in this paper were operated by a different technique, i.e. by applying the cerclage through the large opening between the pubic bones and the ischium (Figure 1).

The patient is usually under general anesthesia, supine, with very slightly flexed hips. A urethral catheter is used except in cases where rupture of this structure has occurred. A 10 cm long transverse incision over the symphysis is made. It is very easy to find the rupture of the symphysis and the large hematoma, almost always present, is evacuated. The medial corners of the foramina obturatoria are located from behind and with a blunt instrument a canal through the structures is made here through the fibrous tissue. With a flexible copper probe it is not too difficult to pass silk threads first through the one and then the other foramen obturatum, locate the urethra which is far distant, and with the help of the silk wires pass a 1 mm thick steel wire through the canal obtained and twist it firmly to bring the

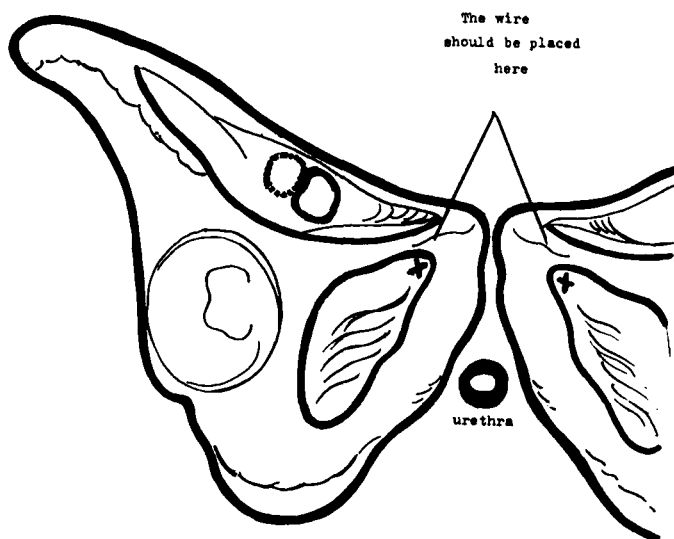


Figure 1. Placement of the cerclage.

two surfaces closely together. The thickness of the cartilage in the symphysis varies, and therefore on X-rays taken after surgery there will be a varying distance in different cases between the bony surfaces of the symphysis. This does not mean incomplete approximation. Bleeding is controlled. Of course the twisted ends of the wire must be hidden in the tissues to avoid later difficulties.

Usually no drainage has been necessary. The skin is closed. No outside fixation is needed and the patient can move his leg immediately after surgery. It has happened that the patient, without difficulties or complications, has tried to walk already on the day of surgery.

The sturdy cortical layer in the edges of the foramina obturatoria most certainly provides sufficient resistance to prevent the 1 mm stainless steel wire from cutting through the bone. Experiments have revealed that with the wire through the foramina obturatoria, as compared to the wire through a drill hole in the bone, the load could be increased by approximately 75 per cent before the wire would cut through the bone.

Holdsworth (1969), without describing the technique, has described the operation as a "terrible undertaking". That is by no means my experience. Holdsworth stresses the fact that the most dangerous complication of the pelvic lesion is the big hemorrhage which sometimes occurs and he says that no local surgery can control it. There are cases in which it has proved to be fatal. In my experience, the operation described helps to stop bleeding and oedema formation because it allows restoration of the anatomy, closure of the gap in the tissue, as well as prevention of movement of the fragments.

My series included nine patients, the first three of whom were operated by Erik Moberg. In eight of these patients the accident also caused other lesions, for instance: pelvic fractures, intestinal ruptures, perineal lesions, and bladder and urethral injuries. One of the patients was admitted with a ruptured symphysis after steeple-chasing. He had no other signs of injury but, of course, loosening of sacro-iliac joints must have been present.

The patients were either operated on at the time of admittance—the cerclage being performed in connection with operative procedures for ruptured abdominal or pelvic organs—or soon afterwards. No infection occurred. In no case did the wire cut through the cortical layer of the bone. The wire was removed in some cases after about a year, but in most cases it was left. The patients remained in bed without a sling for only 3 to 4 weeks after the operation; and then

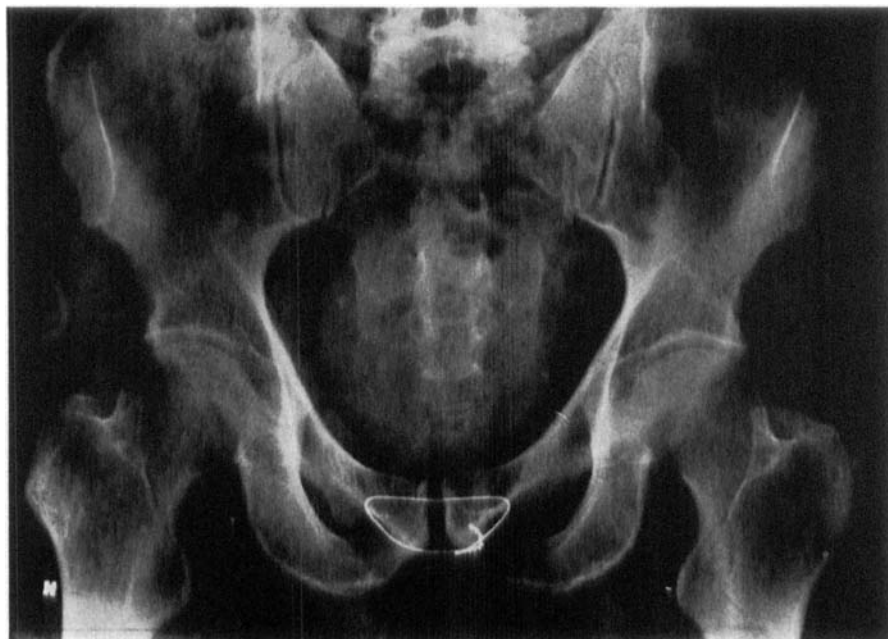


Figure 2a.

Figures 2a and b. Case 6. Admitted after steeple-chasing. Rupture of symphysis, but no other injuries. Before and one month after operation.

if other injuries permitted, they were subjected to weight-bearing. The patients were requested to move their legs immediately after the operation. The pelvic fixation made such movement possible. The severe oedema of the legs often present prior to operation was found to decline rapidly after reduction of the symphysis. No thromboses developed in the legs.

Out of the nine operated patients, one died two days after admittance due to extensive abdominal and pelvic lesions. An 80-year-old male who also had cerebral contusions died one month after the operation due to pulmonary oedema, without being in a fit condition to be mobilized during that time but without symptoms from the pelvis. All seven remaining patients, who have been followed up, healed and showed a very good postoperative result. In no case was there any instability of the pelvis. The patients moved without difficulty and stood on one leg without pain or instability. They were all satisfied with the result. The patient who was admitted after the accident on horse-back has taken up riding again (Table 1).

*Figure 2b.*

The procedure mentioned is now used as the standard treatment for ruptures of the kind mentioned and with the same good results.

Table 1. Case material

Pat. no.	Age at injury	Trauma	Year of operation	Year of follow-up	Clinical signs of instability	Complaints of pain
1	23	fall from height	1960	1968	no	no
2	38	traffic	1961	died two days later of extensive abdominal lesions		
3	37	traffic	1961	1965	no	no
4	20	traffic	1962	1968	no	no
5	50	traffic	1964	1968	no	no
6	47	steeple-chasing	1964	1968	no	pains in lumbar region
7	50	traffic	1965	1969	no	no
8	80	traffic	1965	died one month after operation from pulmonary oedema		
9	49	traffic	1965	1969	no	no



Figure 3a.

CASES

1. Plater, now taxi-driver, aged 23, 1960. Fall from 5th storey. Complicated pelvic fracture and large lacerations. Operation on day of admittance. Moves without difficulty. No pain.
2. Plater, aged 38, 1961. Run over by truck. Pelvic fracture and large lacerations. Ruptured intestines. Extensive abdominal operation on day of admittance. Died two days later from the abdominal lesions.
3. Electrician, now shop assistant, aged 37, 1961. Crushed under truck. Pelvic fractures and severe genital injury. The soft tissue lesions were sutured immediately. Pelvic lesion subjected to surgery 6 weeks later. Complete stability and no pain from pelvis but plastic reconstruction of genitals was not closed four years later.
4. School girl, still studying, aged 20, 1962. Admitted after car accident. Pelvic fracture. Operated on after five days. No discomfort. Now goes in for sports.
5. Laborer, aged 50, 1964. Admitted after car accident. Pelvic fracture with rupture of the bladder. Operated upon on day of admission. The pelvis is now stable, but the patient complains of pain in the lumbar region with heavy work. Due to this, he is periodically sick-listed.

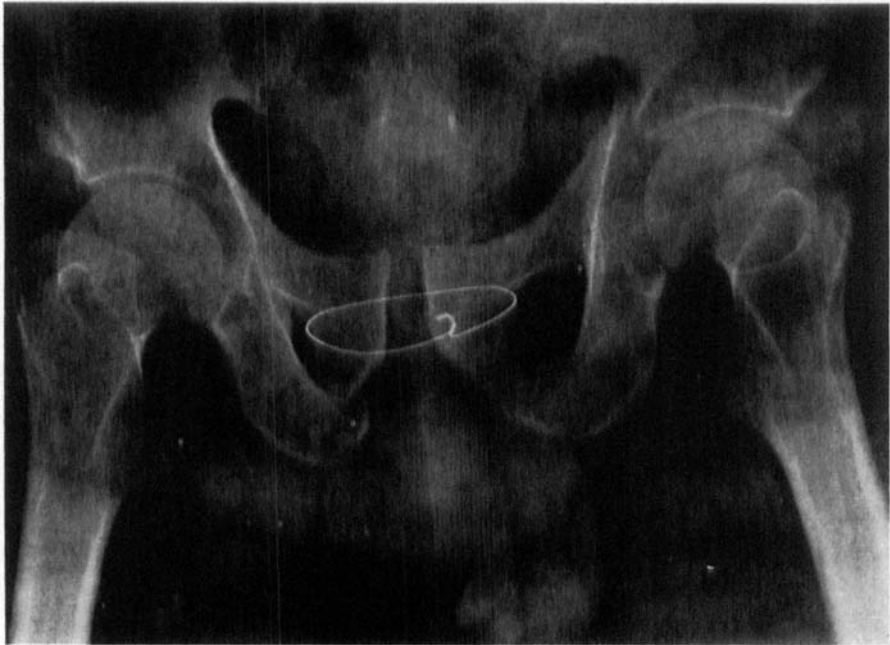


Figure 3b.

Figures 3a and b. Case 7. Run over by car. Rupture of symphysis, but also pelvic fracture and ruptured intestines. Pelvic lesion before and one month after operation.

6. Clerk, aged 47, 1964. Admitted after accident in steeple-chasing. Had been thrown into the air and landed heavily on the horse again. No other injuries. Operated on immediately. Has taken up riding again and has no complaints (Figs. 2a and b).

7. Foreman, aged 54, 1965. Run over by car. Pelvic fracture and intestinal rupture. The pelvic lesion was operated on four weeks later. The pelvis is now stable and there is no pain (Figs. 3a and b).

8. Pensioner, aged 80, 1965. Knocked down by car. Pelvic fracture and cerebral contusions. Operation one week later. Poor general condition. Expired one month later from pulmonary oedema without being subjected to mobilization.

9. Manager, aged 49, 1965. Traffic accident. Pelvic fracture and rupture of the symphysis. Operated on the day after accident. After 8 weeks, back to work partially and after 12 weeks had no complaints and was working full time.

SUMMARY

A series of nine patients who were operated upon for traumatic rupture of the symphysis is reported. The patients were treated with

cerclage, using a stainless steel wire through the foramina obturatoria. One patient died two days after admittance from abdominal lesions and one patient died one month after the accident from another disease. The others, all of whom were examined, regained stability very soon in their pelvis and are subjectively and objectively quite restored with respect to the pelvic injury.

The procedure allows the patients out of bed and back at work much earlier than if treated by the sling method. The risk of fatal bleedings can probably be reduced as well as the risks of oedema and thrombosis.

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