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SURGICAL TREATMENT OF INTERSPINAL OSTEOARTHROSIS ("KISSING SPINE")

BY

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In 1932 Baastrup published his first work on the particular changes in the spinous processes (osteoarthrosis of the spinous processes or interspinal osteoarthrosis) which since have been called also Baastrup's disease, besides "kissing spine". This work has been followed by several others on the same subject.

Interspinal osteoarthrosis or "kissing spine" signifies pathologic-anatomical changes in the lumbar spinous processes and the intermediate soft parts. Occasionally the lesion may involve also the lower dorsal spinous processes and the first sacral segments.

The changes, which according to Baastrup arise from abnormal pressure phenomena between the spinous processes, consist in a diminution of the height of the interspinal intervals, so that the spinous processes appear closely adjacent. Pressure between the adjacent spinous processes results in structural changes in the form of osteosclerosis of the upper and lower margins of the processes, the margins becoming thickened, condensed and sclerotic. Facets may be formed, and sometimes they may even develop small articulations between some spinous processes. In some cases, exostosis-like new-formations of bone are seen at the areas of contact; less frequently there is deterioration of the bone with the formation of a cyst-like cavity.

The changes in the soft parts consist in more or less extensive or pronounced destruction of the interspinal tissues, which in marked cases may undergo complete destruction.

Further, there may be areas of calcification in the soft parts, in the interspinal ligaments, and also in the supraspinal ligament.

Sometimes small areas of bone may be seen to become detached from the spinous processes. Further, the spinous processes may break; and, in the fully developed cases, ankylosis may be seen between adjacent spinous processes.

As etiological factors in the development of this lesion Baastrup considers an increased lordosis of the lumbar column as the primary and principal, but he mentions also other causes—*e.g.*, an increase in the mass of the spinous processes as seen in Paget's disease and fluorosis. Further, mention is made of atrophy of the vertebral bodies and the intervertebral disc, spondylosis deformans, and congenital high spinous processes and low vertebral bodies, or both anomalies together.

The lesion occurs preferably in elderly persons but, as is evident from the present material, it may be encountered also in the younger age-classes. Clinically, it manifests itself with the features of lumbago, appearing in attacks, or taking a more chronic course.

The pain may set in on bending forwards and backwards, besides on twisting of the lumbar column. As to the cause of the pain over the loins on bending backwards, Baastrup states that the close-set spinous processes by this motion are forced against each other and in this way exert a strong pressure on the interspinal tissue that may give rise to small hematomas. The pain appearing on bending forwards, Baastrup thinks, may be explained as attributable to ruptures of the interspinal ligaments which have become affected by the pressure and thus are less resistant, so that they break more readily on excessive strain.

In addition, the pain may result from reactive oedema or perhaps sometimes from true inflammatory changes in the periosteum or ligaments. Also secondary protracted muscular contraction is said to be contributory to the appearance of the pain.

The acute forms require no treatment outside of rest and application of heat. The chronic forms have been treated phy-

sically sometimes in connection with immobilization by means of various forms of corset, and with X-ray treatment. Further, operative treatment has been tried (Wessel, Guildal, Kapel, Semb, and others) either in the form of Albee's bridge operation or by partial or total resection of the spinous processes involved.

In the Orthopedic Hospital in Aarhus, we have for some years employed partial resection of the spinous processes in cases of this lesion, and we think that an estimation of the results obtained will now be of interest.

In order to obtain an impression of how often "kissing spine" occurs in an orthopedic clinic, it may be mentioned that since the institution of the Ortopedic Hospital in Aarhus, in September 1936, a total of 14,520 patients have applied for advice and treatment up to July 1942. Of this total, 2145 patients were suffering from some affection of the back, and among these, "kissing spine" was diagnosed in 54 cases.

The 54 patients who thus make up the present material are distributed in the following three groups:

Group I: Cases with "kissing spine" as chief diagnosis..... *37 patients*
Group II: Spondylosis deformans, complicated by "kissing spine" ..... *6 patients*
Group III: Observation for "kissing spine" in cases where minor changes were found which have to be interpreted as evidence of this lesion, but without distinct roentgenographic signs of it..... *11 patients*

Group I comprises 37 patients with kissing spine, 19 men and 18 women. The male patients were from 23 to 58 years old, with an average age of 40 years, while the women were from 15 to 45 years old, averaging 33 years of age.

As to their treatment, these patients are divided into two groups as 25 patients received no operative treatment, while 12 were given operative treatment.

Non-operated patients are 12 men and 13 women. The men were from 23 to 58 years old, with an average age of 45 years,

while the women were from 15 to 45 years old, averaging 34 years.

In 5 of these cases (2 men, 3 women) operative treatment was advised after a diagnostic injection of novocaine at the points of pain had shown a convincing effect. At the working up of the material, these patients had not yet returned for operative treatment; so for the present they are recorded as untreated.

Of the remaining 20 patients, 11 (5 men, aged from 43 to 58, and 6 women, aged from 37 to 45) have presented clear-cut cases of "kissing spine" without any other complicating affection of the spine, like the above-mentioned patients, where we have offered operative treatment.

In 6 of these cases diagnostic novocaine injektion was tried in order to see whether operative treatment might be indicated, but in three of these cases the injection was ineffective, and in the remaining three cases the injection had a moderate but not convincing effect.

Of the 11 patients with "kissing spine" without any complicating lesion of the vertebral column, 10 were treated conservatively with a supporting corset of fabric, while one received no treatment. As the material is worked up with a particular view to the effect of the operative treatment, no information is available about the effect of the conservative treatment except that the supporting fabric corset has been of good help in one case, while the effect of this measure in the remaining 9 cases is not recorded.

In the remaining non-operated patients the lesion was *complicated* in 9 cases by some other affection of the vertebral column, namely:

Scheuermann's kyphosis	1 case
Lumbar scoliosis	2 cases
Sciatic scoliosis	2 "
Vertebral sacralization	2 "
Sequelae of lumbar distortion	1 case
Herniation of intervertebral discs, severe	1 "

Among the above-mentioned patients, the effect of novocaine injection at the points of pain was tried in 3 cases. It proved ineffective except in one patient with a 3' degree scoliosis, and as this patient was symptom-free on wearing a fabric corset that had been prescribed previously, there seemed to be no particular reason to advise operative treatment.

The 9 patients with complicating affections of the vertebral column were all treated conservatively with supporting fabric corset, which was of good help in 5 cases, of moderate effect in 2, while we have no information about the result of the treatment in the remaining 2 cases.

OPERATIVE TREATMENT

In the present account the main interest is attached to the results obtained in the patients who were given operative treatment—altogether 12 patients, 7 men and 5 women.

The male patients in this group were from 26 to 46 years old, with an average age af 35 years, while the women were from 18 to 40 years old, averaging 28 years.

In 3 of these cases the past history of the patient gives positive information about some previous *accident* with injury to the vertebral column, which presumably has to be associated with the development of the present lesion. Thus, in one of these patients, aged 46, the symptoms appeared 30 years prior to his treatment in this clinic—after a quick and forced backward bending of the spine, as he was going to lift a bucket and put all his force in the movement because he thought the bucket was full, whereas it was empty.

Another patient had suffered a compression fracture of the 12' dorsal vertebra a year before he applied to this clinic. The third patient had had symptoms of the lesion for six years, after traumatic injury to the back.

Symptoms.—Complaints: In all 12 cases the patients have complained of pain localized to the lumbar region, partly in the midline, partly in the sacrospinal musculature. In 10 of the patients the pain was not radiating, while in 2 it was associated with pain radiating down in the lower extremities.

In 8 patients the pain appeared while at work, whereas in 4 it appeared both while at work and at rest, especially when the patient was lying on his back. The pain has appeared on bending backwards (5 patients), or on bending forwards (4 patients), while in 3 cases it appeared both on forward and backward bending of the spine.

Further, 6 patients have complained of a marked sensation of tiredness over the loins.

The duration of the symptoms has been from 1-30 years, averaging about 7 years.

Physical Examination.—Palpation has revealed a marked tenderness on pressure between the affected spinous processes (11 patients). The mobility of the spinal column has decreased in 8 patients and 4 patients showed a pronounced increase in the lumbar lordosis.

X-ray Examination: All 12 patients have shown distinct changes in the spinous processes in the form of a decrease in the interspinal intervals associated with sclerosis of the adjacent margins of the spinous processes, sometimes combined with pronounced faceting.

The roentgenographic changes have been localized to the spinous processes of the following vertebrae: 12' dorsal vertebra in 1 case; 1' lumbar in 1 case; 2' lumbar in 5; 3' lumbar in 9; 4' lumbar in 10; 5' lumbar in 6; and 1' sacral in 3. Thus, the spinous processes of the 4' and 5' lumbar vertebrae have most often been the site of the disease.

In 3 cases the lesion was limited to the adjacent spinous processes of 2 vertebrae; in all the remaining cases the changes were observed in the spinous processes of more than two vertebrae. Thus, in 3 patients the disease involved two spinal intervals, and in 6 cases, 3 spinal intervals.

In 3 of the operated patients the coincidence of another columnar lesion was revealed by X-ray examination and the physical examination. Scheuermann's kyphosis was found in 1 patient together with spina bifida of the first sacral segment. In another patient lumbalization and spina bifida of the 1' sacral vertebra was combined with acute sacrum. Finally, one

patient presented sequelae of a compression fracture of the 12' dorsal vertebra combined with moderate sinistroconvex scoliosis.

Previous Treatment: 4 of the operated patients had been under treatment previously, partily in the form of physical treatment, partly diathermy and X-ray treatment together with corset, plaster or fabric. In all 4 cases the treatment had only a transitory effect or none at all.

Diagnostic Novocaine Injection.—This test was applied to 10 of the 12 operated patients as follows: If, at the time of the examination, the patient complains of pain, a 1 % novocaine solution is injected at once between the spinous processes at the points of pain, and the patient is then put to perform the work which is known from experience to elicit the pain—*e.g.,* washing the floor, digging, etc.

If, at the time of the examination, the patient does not complain of pain, he is set to perform the work which is known to elicit the symptoms, and then, on the appearance of the symptoms, he is given the novocaine injection and told to keep working.

Operation has been performed only on patients in whom the diagnostic novocaine injection has had a convincing effect on the form of cessation of the pain, sometimes accompanied by abolition of the fixation of the lumbar column.

Operating Technique.—The operations to be taken into consideration in the treatment of this lesion consist in ankylosing measures in the form of Albee's bridge operation or in complete or partial removal of the spinous processes affected.

In this hospital we have employed exclusively the partial resection of the spinous processes.

Technique: The operation is performed under ether anesthesia, and the patient is lying on his side. An arcuate incision is made over the spinous processes concerned. The fascia is divided in the midline, together with the underlying supraspinal ligament. The musculature is detached from the spinous processes by blunt dissection. Then an abundant section is chiselled off from the close-set margins of the spinous processes. It is important to extend the chiselling into the depths. The resulting intervals

between the spinous processes are filled by interposition of musculature, and the wound is closed by sutures in the musculature, fascia and skin.

The patient is confined to bed on his back for 2-3 weeks. After this, in some cases the musculature of the back is exercised passively and actively for a brief period. The patients are discharged after ca. 3-5 weeks in the hospital. The average duration of the stay in hospital has been 31 days.

The postoperative course was uncomplicated in 8 out of 13 cases (one patient was operated on twice). In the remaining 5 cases a slight difficulty in urination appeared in the form of paralysis of the bladder, which yielded to doryl injections; catheterization was required in one case. One of these patients had also a slight intestinal paralysis which subsided on employment of douche enema. In one patient a small hematoma appeared at the site of the operation; it was absorbed spontaneously.

Histological examination of the removed tissue was performed in one case, and showed fibrocartilaginous transformation of the intraspinal ligaments.

After-treatment: Two patients were treated temporarily (½-1 year) with supporting fabric corset. Also the two patients in whom the condition remained unchanged after the operation were treated postoperatively with supporting fabric corset.

CASE RECORDS OF OPERATED PATIENTS

Case 1. (B 6320)

Female, housemaid, single. Born 27/1-1917.

During the past year she has been troubled with pain in the midline of the back corresponding to the lower lumbar vertebrae but no radiating pain. In addition, complaint of tiredness. The pain is present both during work and at rest. For the last 10 months she has been unable to work on account of the pain. No previous treatment.

Physical Examination: Moderate, fixed kyphosis of the thoracic spine. Tenderness on palpation between the spinous processes of the 4' and 5' lumbar vertebrae. Some fixation of the lumbar column and pain on bending backwards. Slight increase in the lumbar lordosis.

X-ray Examination: Moderate Scheuermann kyphosis of the thoracic

column. Sclerosis of the margins of the spinous processes of the 4' and 5' lumbar vertebrae and the 1' sacral. The inferior margin of the spinous process of the 4' lumbar vertebra appears as an independent osseous area (detachement?, independent osseous anlage?).

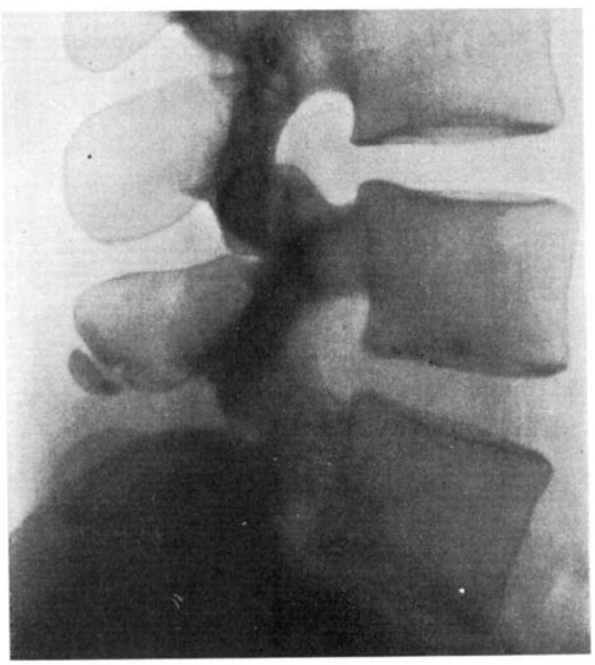

Fig. 1.

Treatment.—On 4/1-39, under ether anesthesia, an arcuate incision was laid, with the spinous processes of the 4' lumbar vertebra as center. The independent osseous element below the spinous process was removed; further, a part of the inferior margin of this process was resected.

Course.—The postoperative course was uncomplicated except for a slight difficulty in the urination, which yielded to injection of doryl.

The sutures were removed after two weeks; the wound had healed primarily. The patient was allowed to get up after 26 days, and she was discharged after 30 days, after staying in the hospital altogether 32 days. At her discharge she was provided with a temporary supporting fabric corset, the use of which was discontinued after six months.

X-ray control examination showed that the independent bone element beneath the spinous process of the 5' lumbar vertebra had been removed together with the lower margin of this process. Now there was a god distance between the spinous processes.

Reexamination, 15/5-42: The patient is perfectly satisfied with the result of the operation. She has no pain or sensation of tiredness in her back. She is able to do the work of a housemaid in the country, including work in the field, without any inconvenience.

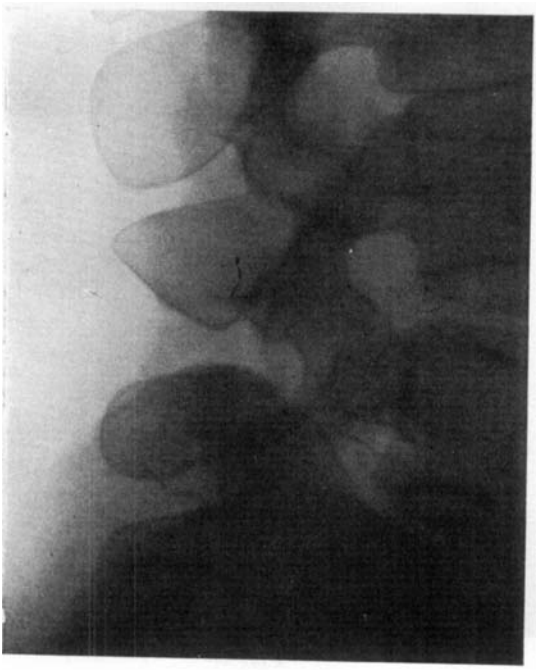

Fig. 2.

Physical examination: Back normal, except for the previous moderate Scheuermann kyphosis; no tenderness. Free mobility in the spinal column without fixation.

Case 2. (B 8354)

Male, farmhand, single. Born 11/3-1913.

For the past two years he has been troubled with pain and tiredness in the lumbar column, without radiation of the pain. The pain is present when at work, but not at rest. On 22/1-1940 he applied to the Out-patient Department of this hospital, and was treated with plaster corset for 3 months, with favourable effect. But, when the corset was removed, the symptoms reappeared, on which account he has given up farm work.

Physical Examination: Slight dextroconvex scoliosis of the lumbar

column. Tenderness on palpation between the spinous processes of the 4' and 5' lumbar vertebrae. Some fixation of the lumbar column on moderate bending backwards, and this movement is accompanied by pain. Moderate increase in the lumbar lordosis.

X-ray Examination: Facet formation between the spinous processes of the 4' and 5' lumbar vertebrae; sclerosis of the margins of these processes. In addition, lumbalization of the 1' sacral segment on the right side, together with spina bifida of the 1' sacral segment. Moderate acute sacrum.

Treatment.—On diagnostic injection of novocaine between the spinous processes of the 4' and 5' lumbar vertebra the patient became free from pain. He was provided with a supporting fabric corset, which proved to have no particular effect, and he returned to the clinic 9/9-1940, when his condition was found to be the same as before. He had been unable to work in the intervening period. Diagnostic novocaine injection was now repeated, with the same result as before: it made the patient free from pain. He was therefore admitted for operative treatment.

12/9-1940: Under ether anesthesia, partial resection of the spinous process of the 4' lumbar vertebra, with removal of a part of the inferior margin. The postoperative course was uncomplicated.

Course.—The sutures were removed after two weeks, the wound had healed primarily. The patient was allowed to get up after 21 days, and he was discharged after 25 days, provided with the supporting fabric corset he had worn before, after staying in the hospital altogether 30 days.

The operation gave no improvement of his condition, however, and on 14/5-1941 he was readmitted. There was now a distinct tenderness between the spinous processes of the 3', 4' and 5' lumbar vertebrae.

X-ray examination showed that the previous resection of the spinous process of the 5' lumbar vertebra had not been sufficiently radical, as the more basal part of this process was still in contact with the spinous process of the 5' lumbar vertebra. In addition, a moderate degree of the lesion was made out between the spinous processes of the 3' and 4' lumbar vertebrae.

Treatment.—As the pain again subsided on diagnostic injection of novocaine at the points of pain, operation was performed again. On 3/6-1941, under ether anesthesia, partial resection of the spinous processes of the 3', 4' and 5' lumbar vertebrae was performed.

Course.—The postoperative treatment was uncomplicated. The sutures were removed after two weeks; the wound had healed primarily, and the patient was allowed to get up after 16 days. He was discharged after 30 days, with supporting fabric corset.

X-ray control examination showed a good distance between the resected spinous processes.

As the patient still complained of inconvenience and persistent symp-

toms, he was readmitted on 6/8-1941 for exercise and training of the musculature of the back; he was discharged two weeks later.

Reexamination, 8/5-1942: The patient states that his condition is unchanged. He still complains of pain and tiredness in the lumbar column, tenderness on palpation between the spinous processes and some fixation of the lumbar column. The musculature of the back is well-developed. The patient has tried to work on a farm but had to give it up. The Invalidity Insurance Council has granted him financial aid for training in shoe-making.

Cace 3. (B 9548)

Male, farmhand, single. Born 17/1-1897.

For the past 15 years he has complained of pain and tiredness in the back, over the loins. The pain has not been radiating, and it has been present only at work, in particular on bending forwards.

Physical Examination: Tenderness on palpation between the spinous processes of the 4' and 5' lumbar vertebra and in the 1' sacral. No increase in the lumbar lordosis. Free mobility of the back, but bending forwards and backwards gives pain.

X-ray Examination: The 4' and 5' lumbar spinous processes and the 1' sacral are close-set, with a moderate degree of sclerosis of the margins and moderate faceting.

Treatment and Course.—On 29/8-1941. Under ether anesthesia, partial resection of the 4' and 5' lumbar and 1' sacral spinous processes. Postoperative course uncomplicated. Sutures removed after two weeks; the wound is healed primarily. Up after 20 days; discharge after 25 days. Total stay in hospital, 30 days.

X-ray control examination showed a good distance between the resected spinous processes.

Reexamination (letter of 18/5-1942): Observation period 1¼ years. He is feeling perfectly well, working as a farmhand, taking part also in peat-digging. No pain or tiredness. The mobility of the spinal column may possibility have been reduced a little as he states he is not so supple now as before.

Case 4. (B 9422)

Female, teacher, single. Born 15/8-1900.

Two previous attacks of sciatica, 17 and 1 years ago; for several years she has been liable to lumbago. On account of these complaints she was hospitalized 1 year ago and was treated with diathermy, X-rays and a supporting fabric corset, without any particular effect. Now her complaints consisted in pain and tiredness over the loins, with the pain radiating down in the legs.

Physical Examination: Tenderness on palpation between the spinous processes of the 3' and 4' lumbar vertebra. No increase in the lordosis. Moderate fixation of the lumbar column.

X-ray Examination: Close-set spinous processes in the lumbar column, especially the 3' and 4', with moderate sclerosis of the margins of these two processes.

Treatment and Course.—Diagnostic novocaine injection rendered the patient free from pain in a couple of hours.

12/9-1940: Under ether anesthesia, resection of the inferior margin of the spinous process of the 3' lumbar vertebra. Postoperative course uncomplicated. Up after 21 days. Discharged after 26 days, with the supporting fabric corset she had used before. Total stay in hospital, 38 days.

X-ray control examination showed a good distance between the spinous processes at the site of the resection.

Reexamination, 18/5-1942: Observation period 1¾ years. The patient states her condition has improved somewhat, as she has only a little pain and tiredness in the lumbar column now and then. Slight tenderness on palpation between the 4' and 5' lumbar spinous processes. Some fixation of the lumbar column.

X-ray examination shows a good distance between the spinous processes of the 3' and 4' lumbar vertebrae but a slight degree of faceting between the 4' and 5' spinous processes.

Case 5. (B 10034)

Male, laborer, single. Born 9/4-1894.

About 30 years ago the symptoms commenced with pain over the loins when he strained himself by lifting an empty bucket which he believed to be full. His complaints have been pronounced in the past year, in the form of tiredness and pain over the loins, but no radiation of the pain. The pain is present only at work, and it subsides as soon as he lies down.

Physical Examination: Tenderness on palpation between the spinous processes of the 4' and 5' lumbar vertebrae. Moderate fixation of the lumbar column with reduction in the capacity for forward bending, which movement was associated with pain.

X-ray Examination: Close-set spinous processes of the 4' and 5' lumbar vertebrae, with slight faceting and sclerosis of the margin.

Treatment and Course.—Diagnostic novocaine injection at the point of the pain showed a good effect.

12/11-1940: Partial resection of the adjacent margin of the 4' and 5' spinous processes.

Postoperative course uncomplicated. Up after 16 days; discharged after 20 days. Total stay in hospital, 24 days.

X-ray control examination showed a good distance between the resected spinous processes.

Reexamination, 20/5-1942. No inconvenience whatever. He works as a laborer, doing very heavy manual work. No pain or tiredness.

Physical Examination: No tenderness on palpation. Free mobility in the vertebral column.

Case 6. (B 9906)

Female, wife of laborer. Born 8/4-1911.

For the last 6-8 years symptoms had been present in the form of pain and tiredness over the loins at work.

Physical Examination: Slight increase in the lumbar lordosis. Tenderness on palpation between the spinous processes of the 2', 3', 4' and 5' lumbar vertebrae, decreased mobility in the lumbar column. Pain on bending forwards.

X-ray Examination: showed close-set spinous processes of the vertebrae mentioned together with slight sclerosis of the margins and a suggestion of faceting.

Treatment and Course.—Diagnostic novocaine injection gave absence of pain and greater mobility in the lumbar column.

10/12-1940: Under ether anesthesia, partial resection of the adjacent margins of the 2', 3' and 4' lumbar spinous processes. Postoperative course uncomplicated. Up after 16 days; discharged after 20 days. Total stay in hospital, 27 days.

Reexamination, 22/5-1942. Feeling perfectly well except for a little tiredness over the loins after working in the garden. No pain.

Physical Examination: No tenderness or fixation of the lumbar column. She considers herself to be perfectly well.

X-ray Examination: Good distance between the resected spinous processes.

Case 7. (B 10267)

Male, cowman, married. Born 13/7-1902.

About one year before admission he suffered a traumatic injury to the back, with fracture of the 12' dorsal vertebra. He was treated with rest in bed and, later on, with plaster corset. In spite of the corset, the pain persisted, and it increased after the plaster corset was removed. He has not been able to work since the accident. Complaints: Pain and tiredness over the loins, the pain being present at rest as well as at work.

Physical Examination: Tenderness on palpation in the midline between the spinous processes of the 12' dorsal and the first three lumbar verte-

brae. Rather pronounced fixation of the lumbar column. Pain most pronounced on bending backwards.

X-ray Examination: Marked accentuation of the lumbar lordosis. Pronounced faceting between the spinous processes of the 12' dorsal and 3 first lumbar vertebrae, with sclerosis of their margins. Slight sinistroconvex lumbar scoliosis. 12' dorsal vertebra slightly wedge-shaped.

Treatment and Course.—Good effect from diagnostic novocaine injection at the points of pain; he was free from pain for 4 hours after the injection, at work as well as at rest.

28/1-1941: Under ether anesthesia, partial resection of the adjacent margins of the four spinous processes mentioned. The postoperative course was complicated by paralysis of the intestines and bladder, which yielded to treatment with douche enema and injection of doryl. Up after 17 days; discharged after 20 days. Total stay in hospital, 30 days.

Reexamination, 8/7-1942: Observation period 1½ years. Still complaining of pain and tiredness over the loins, in particular while at work, especially on bending backwards. Capable only of light work.

Physical Examination: Reduced mobility in the lumbar column. Dextroconvex scoliosis of the thoracic column, with slight torsion prominence.

X-ray Examination shows that faceting areas of the spinous processes have been removed, and there is a good distance between the processes, so that there is now no evidence of any "kissing spine". On the other hand, a moderate degree of spondylosis has now appeared, with small exostoses along the anterior margin of the vertebral process, especially the 11' and 12' dorsal, where the intervertebral space is narrowed.

The patient states his case as to disablement benefit has been settled with a benefit of 15 %. He is discharged from the hospital with a supporting fabric corset. His condition has to be considered as unchanged; there is no favorable effect from the operation.

Case 8. (B 10327)

Male, chauffeur, single. Born 28/8-1910.

Since youth he had been liable to lumbago when walking with strenuous movement of the vertebral column. Complaints of tiredness over the loins. Previous physical therapy proved ineffective. Now the pain was present at rest as well as at work, but no radiating pain.

Physical Examination: Free mobility in the vertebral column. Pain on bending forwards. Tenderness on palpation between the spinous processes of the last 3 lumbar vertebrae and the 1' sacral. Increase in the lumbar lordosis.

X-ray Examination: Typical "kissing spine" with faceting and sclerosis of the spinous processes of the 3', 4' and 5' lumbar vertebrae and 1' sacral. Increase in the lumbar lordosis.

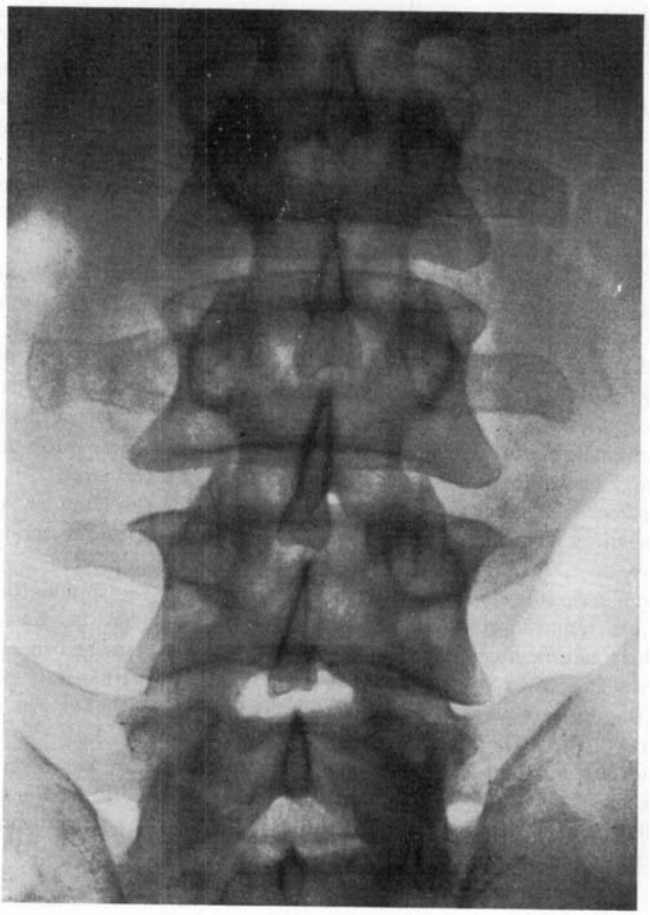

Fig. 3.

Treatment and Course.—Diagnostic novocaine injection at the points of pain made the patient completely free from pain.

23/1-1941: Under ether anesthesia, partial resection of the adjacent spinous processes of the vertebrae mentioned. The postoperative course was uncomplicated. Up after 15 days; discharged after 20 days. Total stay in the hospital, 27 days.

Histological examination of the resected tissues showed fibrocartilaginous transformation of the tendon insertions on the spinous processes.

X-ray control examination showed a good distance between the resected spinous processes, abolishing all evidense of the disease.

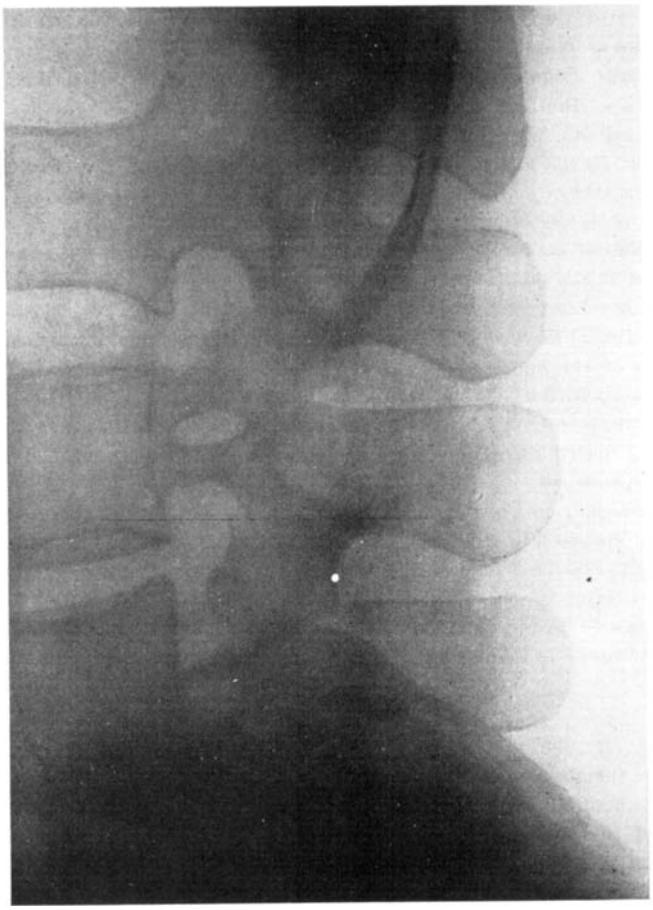

Fig. 4.

Reexamination, 15/5-1942: The patient states he feels much better. He has no pain at rest or at moderate work. On heavy labor he has a little pain over the loins. No palpable tenderness at the site of the operation. Free mobility in the vertebral column.

Case 9. (B 10941)

Female, housemaid, single. Born 24/6-1923.

About 6 years ago she suffered a traumatic injury to her back in falling from the loft to the kitchen floor. Since then, she had pain in her back on working. Sudden aggravation of her condition two weeks

before her admission, without any traumatic injury. Now, complaints of pain over the loins, without radiation, and tiredness on working. No symptoms at rest.

Physical Examination: Tenderness on palpation between the spinous processes of the 2', 3' and 4' lumbar vertebrae. Lowered mobility in the lumbar column. Pain on bending forwards.

X-ray Examination: Close-set spinous processes of the 2', 3' and 4' lumbar vertebrae. No sclerosis of the margins but the contours of the spinous processes appear somewhat indistinct.

Treatment and Course.—Excellent effect from diagnostic novocaine injection at the points of pain, as the patient became free from pain, and the column freely movable.

21/4-1941: Under ether anesthesia, partial resection of the adjacent margins of the spinous processes of the 2', 3' and 4' lumbar vertebrae. The postoperative course was complicated by slight paralysis of the bladder that yielded to injection of doryl.

X-ray control examination showed a good distance between the resected spinous processes.

Reexamination (letter, May 1942): She is now fully able to do her work as housemaid, and she is very satisfied with the results of the treatment. She has no pain. Now and then she feel tired over the loins after working in the garden and after washing. She states there is tenderness to pressure on the site of the operation, and her ability to bend forwards is reduced a little. Observation period, 1 year.

Case 10. (B 12987)

Male, farmhand, single. Born 26/5-1916.

For about 10 years he had been troubled with pain and tiredness localized to the loins. The pain was present at work but not at rest; no radiating pains.

Physical Examination: Tenderness on palpation in the intervals between the spinous processes of the first 4 lumbar vertebrae. Moderate reduction in the mobility of the lumbar column. Pain on bending backwards.

X-ray Examination: Faceting and slight sclerosis of the adjacent margins of the processes spinous of the first 4 lumbar vertebrae.

Treatment and Course.—Diagnostic novocaine injection at the points of pain rendered the patient free from pain at work as well as at rest.

5/2-1942: Under ether anesthesia, partial resection of the upper margin of the spinous processes of the 2', 3' and 4' lumbar vertebrae. The postoperative course was complicated by a rather marked degree of paralysis of the bladder, but this yielded to injection of doryl and catherization. In addition, a minor hematoma appeared at the site of the operation; it

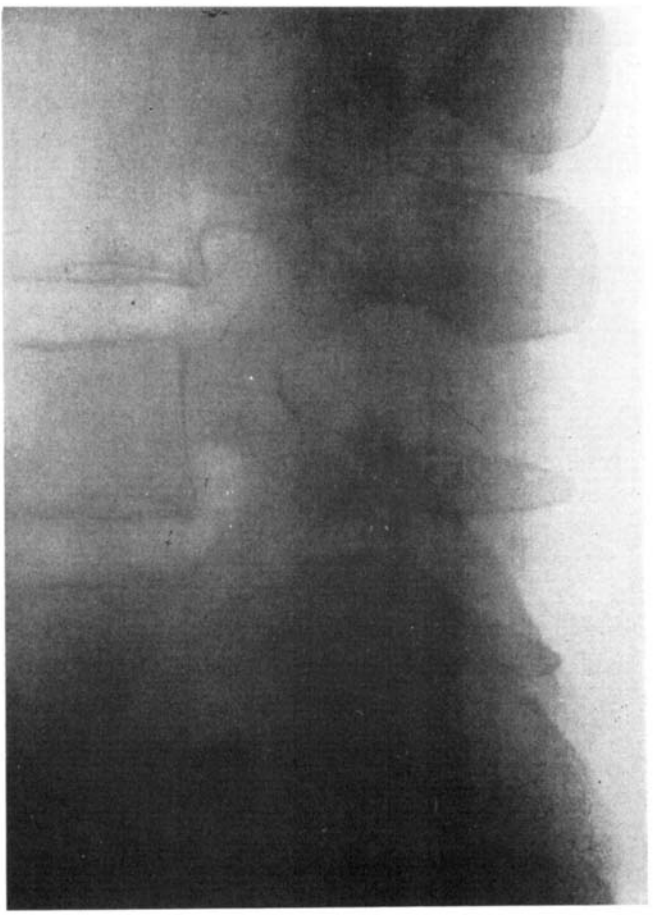

Fig. 5.

was absorbed spontaneously within a few days. Up after 28 days; discharged after 34 days. Total stay in hospital, 38 days.

X-ray control examination showed that a sufficient amount had been resected from the spinous processes of the vertebrae mentioned.

Reexamination, 11/9-1942: Observation period, 7 months. He is able to do his work as a farmhand, noticing merely a little tiredness after hard work.

Physical Examination: No tenderness on palpation at the site of the operation. Free mobility in the lumbar column.

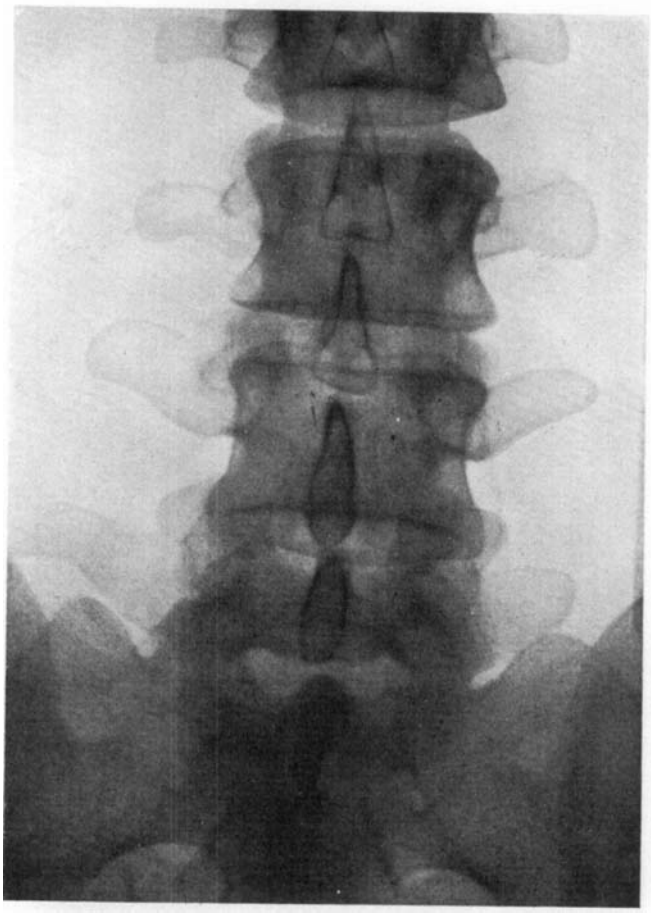

Fig. 6.

Case 11. (B 13601)

Male, farmer, married. Born 28/5-1906.

For the past 10 years, complaints of pain and tiredness over the loins, for which he has received physical treatment to no avail. In the past year he has not been able to work at all, having pain at rest as well as at work. No radiating pain. He has worn a supporting fabric corset, witout any effect.

Physical Examination: Tenderness on palpation in the interval between the spinous processes of the last four lumbar vertebra. Fixation of the lumbar column. Pain on bending forwards.

X-ray Examination: Close-set spinous processes of L2-5 with faceting.

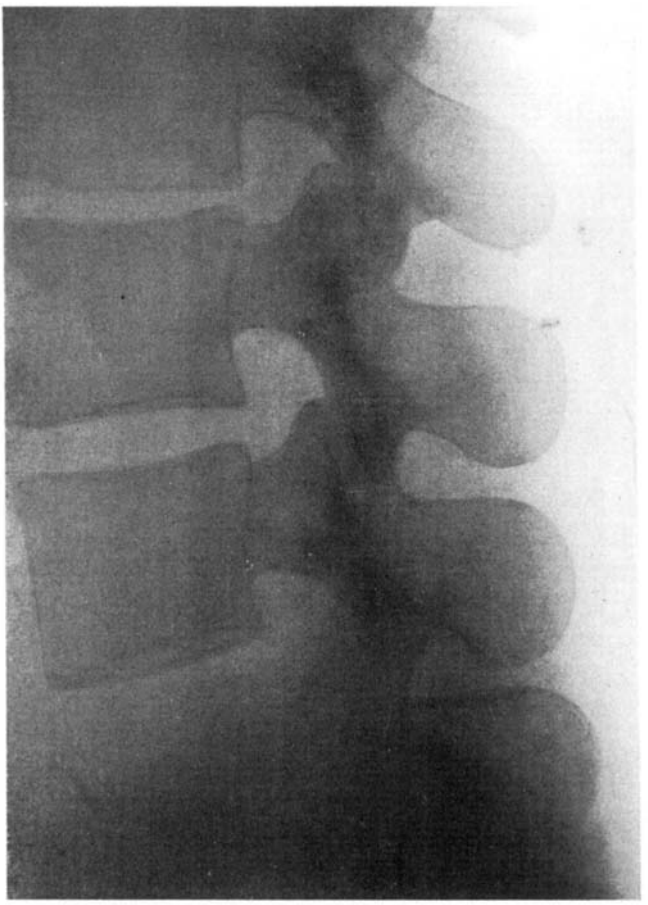

Fig. 7.

Treatment and Course.—Diagnostic injection of novocaine at the points of pain rendered the patient free from symptoms.

28/4-1942: Under ether anesthesia, partial resection of the spinous processes of L2-5. Postoperative course uncomplicated. Up after 21 days; discharged after 24 days. Stay in hospital, 30 days.

X-ray control examination showed an ample distance between the resected spinous processes.

Case 12. (B 13562)

Female, housekeeper, single. Born 4/1-1908.

During the past half year she has been troubled with pain and tired-

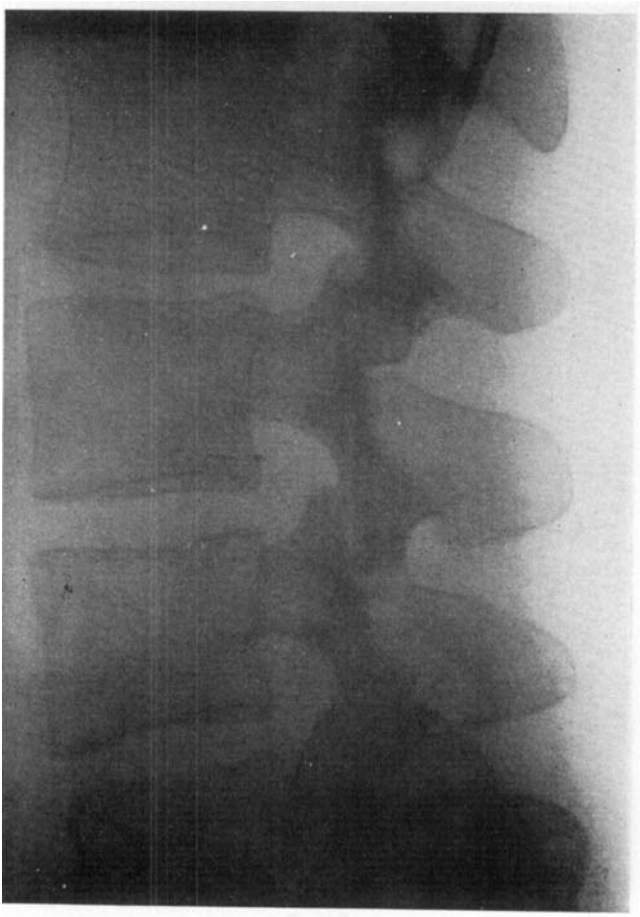

Fig. 8.

ness over the loins while working; and the pain was radiating down into the legs.

Physical Examination: Tenderness on palpation in the intervals between the three last lumbar spinous processes and the 1' sacral. Reduced mobility in the lumbar column. Pain on bending backwards.

X-ray Examination: Close-set spinous processes of the vertebrae mentioned.

Treatment and Course.—Diagnostic novocaine injection made the patient symptom-free.

4/6-1942: Under ether anesthesia, partial resection of the spinous

processes of L3-5 and S1. Postoperative course uncomplicated except for slight paralysis of the bladder that yielded to injection of doryl. Up after 28 days; discharged after 34 days. Total stay in hospital, 38 days.

X-ray control examination: Ample distance between the resected spinous processes.

REEXAMINATION OF PATIENTS TREATED OPERATIVELY FOR KISSING SPINE

This recapitulation of the findings on reexamination of the patients who were treated operatively covers 10 of the 12 patients. The remaining 2 patients have been left out because the observation period has been too short to allow of any conclusions. The reexamination gave the following results:

Pain: All the 10 reexamined patients had pain prior to the operation. In 7 of these patients the pain is now completely absent, and in one it has subsided considerably; unchanged in two cases.

Tiredness: Altogether 6 patients complained of a sensation of tiredness over the loins prior to the operation. This has been completely abolished in 3 cases, decreased in 3.

Tenderness on pressure between the spinous processes: Prior to the operation this sign was present in 9 of the 10 patients. The tenderness to pressure has been abolished in 7, and remained unchanged in 2.

Fixation of the lumbar column: Prior to the operation this phenomenon was present in 8 of these patients. On reexamination the mobility of the lumbar column was found to be normal in 3 of them. In 3 cases the mobility was found to be more free after the operation, although it was still a little reduced, whereas 2 patients showed no change in the fixation of the lumbar column.

Increase in the lumbar lordosis: This phenomenon was present prior to the operation in 4 patients, and on reexamination it was found to have remained unchanged.

X-ray examination: Roentgenographically the morbid factor was found to have been eliminated by the operation in all 10 cases (in 1 patient, however, reoperation was required).

Total Results.—Complete recovery was obtained in 4 cases by the operative treatment. I 4 cases there was a decided improvement, as there remained merely some slight inconvenience in the form of a little discomfort, in particular after fairly hard work, or a slight sensation of tiredness, especially after exertion, and slight fixation of the lumbar column.

In the remaining 2 cases the condition was unchanged, with persistence of the previous complaints and objective findings. Only the X-ray examination showed that the morbid factor has been eliminated, at any rate roentgenographically.

So the reexamination has shown that 4 patients have become perfectly well, 4 have improved, and 2 remained unchanged.

As to the 2 patients in whom no change was obtained in the morbid conditions, it may be mentioned that one was a farmhand, 27 years old, in whom the morbid factor was completely eliminated only on reoperation, about 6 months after the first operation. In addition, this patient presented a complicating lesion of the spinal column in the form of lumbalization and spina bifida formation of the 1' sacral segment, together with a marked degree of acute sacrum. The indication for operative treatment appears to have been quite proper, however, as the diagnostic novocaine injection prior to both operations showed a convincing effect. The patient has given up farm work and is now been trained in shoemaking, with the aid of the Invalidity Insurance Company.

The other case in which the operation did not have the desired effect was that of a cowman, 39 years old, who one year before admission had suffered a compression fracture of the 12' dorsal vertebra. In addition to the kissing spine of the 12' dorsal and the first 3 lumbar vertebrae, the X-ray examination showed also a moderate wedge-shaped deformity of the 12' dorsal vertebra. On reexamination, 1½ years after the operation and about 2½ years after the accident, roentgenography showed an ample distance between the resected spinous processes, but it also revealed a development of spondylosis deformans with exostoses on the anterior margin of the 11' and 12' dorsal vertebrae and narrowing of the corresponding intervertebral space. It is rea-

sonable, therefore, to ascribe his present symptoms to the spondylosis. The patient has given up working as cowman and is now doing lighter work on the farm. He has been granted a disability benefit of 15 %.

THERAPEUTIC RESULTS WITH A VIEW TO THE OCCUPATION OF THE PATIENTS

Women:			
Housemaid on a farm, with occasional work in the field	2	patients	—2 recovered
Housewife in home of workman	1	„	—1 „
Teacher	1	„	—1 improved
Men:			
Farmhand or laborer	4	„	—1 recovered
			2 improved
			1 unchanged
Cowman	1	„	—1 „
Chauffeur	1	„	—1 improved

As the patients in the last two groups therapeutically are of minor interest, their cases will here be surveyed summarily.

Group II: Patients with spondylosis deformans and kissing spine.

6 patients, 5 men and 1 woman. The men were aged from 41 to 55 years; the woman was 39.

Of these patients 5 were treated with corset; 4 of them received a supporting fabric corset, while one patient on admission was already provided with a leather corset on account of previous spondylitis with abscess.

Group II: Observation for kissing spine.

This group comprises 11 patients, 5 men, aged from 30 to 47, and 6 women, from 19 to 47 years old.

Of these patients, 2 showed spondylosis deformans besides minor changes suggestive of kissing spine, while 1 presented a rather marked scoliosis.

Of the patients in this group 4 were treated conservatively with supporting plaster corset.

SUMMARY

The material comprises 54 patients with kissing spine.

Of these patients, 12 were treated operatively with partial resection of the spinous processes affected. On reexamination 10 of the operated patients showed the following results:

4 were completely recovered; 4 showed considerable improvement; and in 2 the lesion remained unchanged.

The remaining 2 operated patients have not yet been reexamined because the observation period is still too short.

ZUSAMMENFASSUNG

Das Material umfasst 54 Patienten mit Osteoarthrosis interspinalis (Mb. Baastrup).

Von diesen Patienten waren 12 mit einer partiellen Resektion der angegriffenen Processi spinosi operativ behandelt worden. Bei der Nachuntersuchung zeigten 10 der operierten Patienten die folgenden Ergebnisse:

4 waren vollständig wiederhergestellt; 4 zeigten eine beträchtliche Besserung; und bei 2 war die Läsion unverändert geblieben.

Die übrigen 2 operierten Patienten sind noch nicht nachuntersucht worden, weil die Beobachtungszeit noch zu kurz ist.

RÉSUMÉ

Le matériel d'observation comporte 54 malades atteints d'ostéoarthrosis interspinalis.

Sur ces malades 12 furent traités opérativement avec résection partielle du processus spinal. A l'examen complémentaire de 10 des malades opérés, on constata les résultats suivants:

4 étaint complètement restitués; chez 4 il y avait une amélioration considérable et dans 2 cas la lésion était sans changement.

On n'a pas encore soumis les 2 derniers malades à un examen complémentaire, la période d'observation étant encore trop courte.