G. WALLGREN, HELSINGFORS:

PREVENTION OF PRESSURE SORES IN MOMMSEN'S METHOD OF TREATING FLEXION CONTRACTURES OF THE KNEE

Mommsen's excellent method of straightening contractures sometimes gives rise to considerable anxiety, since pressure sores are apt to arise on the skin, at the points where the plaster case causes pressure. We are not, however, concerned with slight contractures which can easily be corrected by means of extension, by divided plasters or by the method where correction is obtained by the traction of an elastic band, the plaster case here beeing applied directly upon the skin (method of *Böhler* and his pupil *Schnek*). It is the old contracted knee joints, flexed to a right angle, which can be straightened gradually and effectively by means of *Mommsen*'s method. But, however, the sequelae of decubitus are to be feared when this method is adopted.

When the contracted knee has been laid in plaster according to *Mommsen*'s directions, extension of the knee is effected by twisting the cords, which obviously shortens them. The points which bear the greatest pressure are the anterior surface of the thigh immediately above the patella, and the posterior surface of the leg immediately below the popliteal space. If divided plasters, with jointed metal splints connecting them, are used, the greatest pressure is on the Achilles tendon. It is at these points, which bear the maximum pressure, that sores are apt to develop, and where *Mommsen* therefore places felt or, still better, »*faktis*« cushions, for the purpose of distributing the pressure.

Where treatment has to be carried out for a long time,

these pads become compressed, however; with the result that their protective power diminishes. At the Orthopaedic Hospital in Helsingfors, some new preventive measures have been tried out. A strip of unrefined rubber is bent double so as to form a little bag, which is then filled with finely cut strips of the same rubber. This method of avoiding pressure has proved fairly efficacious, but some practice is required for its use, and becomes a little troublesome. The finely cut strips of rubber must be spread evenly, and the edges of the bag must be pressed

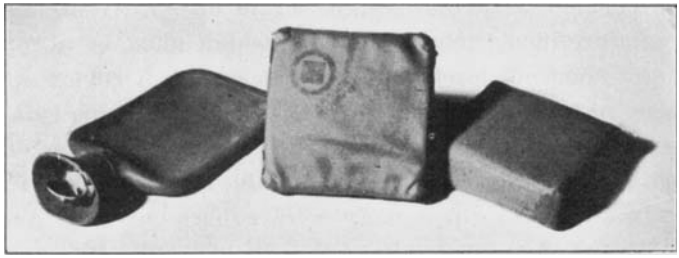

Fig. 1.

closely together, so that the bag becomes a cushion of uniform elasticity throughout. Finally the bag is wrapped in gauze, since the skin is sensitive to direct contact with the rubber.

Dr. *F. Langenskiöld*, Senior Surgeon of the Hospital, has constructed an air cushion which is provided with an ordinary bicycle tyre valve. By means of an ordinary tyre pump the pressure in the cushion can be increased to the desired extent and thus the pressure distributed evenly. Theoretically, of course, this method should be ideal, since by means of a simple manometer it would always be possible to determine the pressure and, at the same time, the force exerted by the cords. As a rule, this force is estimated by the number of turns made by the pegs attached to the cords, but as the cords always stretch to a certain extent it is obvious that no exact measurement can be obtained in this way. Dr. *Langenskiöld*'s method is capable of still further development, since it should be possible by means of capillary tests to determine the maximum pressure which can

be tolerated by the skin of each individual. The pressure could then be regulated, and, consequently, the period of treatment shortened. In practice, however, the method proved too expensive for Hospital use. The experimental rubber cushions (these were ordinary hot water bags to which valves had been attached) often punctured, and demanded much attention. Careless removal of plaster casings damaged many such cushions.

In accordance with an old axiom, »the simpler the better«, the present writer endeavoured to construct a cushion which would combine the elasticity and evenly distribute pressure of the air cushion with the cheapness and durability of the bag made of unrefined rubber. Such a cushion must be always at hand, and must not lose its uniform elasticity. A rubber sponge possesses an evenly distributed elasticity, but it is too soft, and becomes compressed at the point where the greatest pressure is applied. But this does not happen if the rubber sponge is hermetically sealed within a more solid rubber covering, and we then have the same principle as that of hydraulic compression, namely an even distribution of the pressure.

The firm of Braun-Melzungen have made cushions for me, which have been constructed according to the directions detailed above. They are square, their dimensions 11 × 11 centimeters, and they are 3 centimeters in thickness. Each has a covering of thick red rubber over an ordinary rubber sponge. In practice they have proved a great success. They support the pressure of the plaster cases very well, and after beeing subject to such pressure for months are unaltered to such a degree that they can be used again immediately for a fresh case. They must not be boiled, however, but can be sterilised in a corrosive sublimate solution. Of course, they do not last for ever as all rubber gets hard and disintegrates in the course of time.

When these cushions are applied for protection of the skin, they must be wrapped in gauze, and then placed upon the stockinet which covers the extremity. The Plaster of Paris bandages are then applied over these. When the skin is specially sensitive it is advantageous to put a piece of thin felt under the cushion. If these precautions are taken it is possible to obtain

good results in cases of ankylosed polyarthritis followed by contractures, cases which — according to verbal statements made to me by *Mommsen* — have hitherto not been suitable for treatment by *Mommsen*'s method. Contrary to *Erik Jensen*'s experience, kneejoints in growing persont, even if there is osseous ankylosis, can be straightened by *Mommsen*'s method. But it must be remembered, the straightening does not take place in the joint but immediately above it in the neighbourhood of the epiphyseal line.

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G. Wallgren: Skydd mot decubitus vid Mommsens quengelmetod.

ROBERT HANSON, VARBERG:

THE TREATMENT OF THE TUBERCULOUS AFFECTION OF THE ASTRAGALO-CALCANEAL AND THE ASTRAGALO-CRURAL JOINT, ESPECIALLY BY ADULTS

(Later to be published in full).

DISCUSSION

S. Orell, Styrsö:

It is interesting to hear that Dr. *Hanson* for resections in the ankle joint uses the same method which I have myself ended by adopting very largely in performing that operation. I, too, use *Kocher*'s incision, and resect also the tibio-fibular joint. In contrast to him, I do not, however, resect the tip of the lateral malleolus; but after resecting the joint I implant, between the resection surfaces, as substitute for the removed section, a transplanted piece of homoplastic bone of suitable shape, that has beforehand, by a special treatment, been freed from all fat and connective tissue. Such a transplanted piece of bone heals

in well, resists the mechanical pressure without collapsing, and changes its structure while becoming disintegrated through the ingrowth of new bone.

P. Guildal, Copenhagen:

Calls attention to the transmalleolar access to the talocrural joint, with temporary resection of the external malleolus in the manner indicated by the speaker, and points out the advantages of this method.

Asks if Dr. *Hanson* has not observed any valgus after resection of the talocrural joint. Has himself seen a case of very pronounced valgus developing in the talocalcaneal joint after an ankylosis in the talocrural joint. The deformation and the resulting discomfort to the patient had been so great as to indicate an arthrodesis of the latter.

Patrik Haglund, Stockholm:

As the discussion has begun to deal with technical points, it should not be forgotten that this part of the skeleton can be reached extremely well by means of a large semi-circular incision posteriorly, using a flap containing the Achilles tendon and the temporarily detached part of calcaneus. I operated in a couple of my most interesting instances in that way, at a time when I had more to do with tuberculosis than has since been the case. I have even on one occasion, managed to scrape clean an extraarticular focus in the posterior part of the astragalus.

J. Meyer, Copenhagen:

In connection with Dr. Rob. Hanson's lecture I should like to report 4 cases of *arthroitis tuberculosa astragalo-calcanei* treated with resection at the surgical departement of the Finsen Institute in Copenhagen.

The patients were all young women at the age from 14—23; from an anatomicopathological viewpoint three of the cases were mild cases, the process being limited to the joint itself without greater ostitic foci in the two bones; the fourth case

was somewhat severer, as manifestations of ostitis, the size of hazel-nuts, were found in both bones. In none of the cases there were periarticular abscesses. The diagnosis of tuberculosis was established in all cases through microscopy of tissue excised on operation.

All the patients were treated conservatively during a couple of years before the operation — the severe case for 4 years — but this treatment did not succeed in settling down the process; more or less severe pain still persisted during gait. Therefore in all cases resectio articulation astragalo-calcanei was performed. An arch-shaped incision was made below the external malleolus, and passing the dorsum pedis the incision ended at the medial edge of the foot. The peroneal tendons were cut temporarily, the extensor tendons were kept apart, and by means of a periosteal knife there was easy access to the joint. In all cases it appeared that only the greater posterior joint was involved and the resection was therefore limited to this joint. In three cases only thin bone and cartilage lamellae were removed with the chisel, in the 4th case the ostitis was moreover scraped out. In conclusion the incision was sutured; only in the severe case a drainage tube is inserted into the bony cavity of the calcaneus through a contraincision in the planta.

After the operation the patients have been observed for 3—4 years (one of them only for 9 months).

In all the cases the results were satisfactory.

The three patients with relatively slight alterations have all been fit for work from 6 months after the operation, being able to walk without pain and without a stick.

6 months after the operation the patient with the rather extensive ostitis could walk for an hour by means of a stick without getting any pain, but only 2 years after the operation the gait was entirely free from pain without support.

In all the cases the gait was completely normal, the mobility of the astragalo-crural joint not being affected by the operation. Only the lateral movements of the foot in the articulatio astragalo-calcaneus is most frequently entirely done away with; but this will only influence the gait to a small extent.