267. Experimentelle Untersuchung über die Veränderungen des „positiven physiologischen Drucks“ im Tibiabereich nach Fibulakontinuitätsresektion

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Experimental Investigations into the Changes in the "Positive Physiological Pressure" in the Area of a Tibial Fracture in a Model
with the Fibula still Intact

Summary. This investigations were carried out with the aid of a specially constructed apparatus on 50 autopsy preparations. They demonstrated that the intact fibula impedes contact between the tibial fragments and in this way reduces the so-called "positive physiological pressure" which is necessary for a firm alignment of the broken bones.

The "closing effect" is directly proportionate to the loss of substance in the region of the fracture. Defect of 3 mm and 5 mm correspond on average to "closing effects" of the fibula, of 28 kg and 35 kg, respectively.

Zusammenfassung. Die mittels eines speziell konstruierten Gerätes an 50 Obduktionspräparaten durchgeführte Untersuchung konnte zeigen, daß die intakte Fibula die Kontaktaufnahme der Tibiafragmente erschwert und dadurch den für das „sich festgehen“ der Bruchstücke nötigen sog. positiven physiologischen Druck reduziert. Die Sperrwirkung steht im proportionalen Verhältnis zu dem Substanzverlust im Bruchbereich. Einem Defekt von 3 bzw. 5 mm entsprach im Durchschnitt eine Sperrwirkung der Fibula von 28 kg bzw. 35 kg.

268. Der Einfluß von Osteosynthesenmaterial auf Struktur und Belastbarkeit der Bruchzone

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The Influence of Osteosynthesis on the Structure and Stress Resistance
of the Fracture Area

Summary. The mechanical conditions for good fracture union, e. g., exact reposition and absolute stabilization permitting physiotherapy, can be provided only surgically. As the frequency of refractures after compression plate osteosynthesis indicates, the morphologically satisfactory consolidation of the gap with angiogenic bone which occurs with modern methods fails to provide sufficient resistance to stress. This reduced resistance is due to the fact that, in contrast to medullary nailing, any strain is absorbed by the externally mounted plate instead of by the bone. A nonphysiologic restructuring of the bone follows, directed toward the plate because of the abnormal functional adaptation. The usual fracture healing involving