

Decapsulation, on the other hand, offers a more lasting protection against development of an irreversible compartment syndrome. When clinical findings indicate that renal failure may well be imminent, decapsulation of at least one kidney can then permit unrestricted parenchymal swelling and thereby obviate a progression of polyuric acute tubular necrosis into the anuria of complete cortical destruction (Fig. 9).

There are still a large number of unanswered questions regarding renal decapsulation. What are the long term effects, good or bad? Is unilateral decapsulation sufficient in most cases? How late can decapsulation be performed and yet a good response be obtained? However, probably the most pressing question of all is whether or not decapsulation should now be undertaken as a separate operative procedure itself in cases of impending or early renal failure not associated with abdominal surgery.

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DISCUSSION

DR. HIRAM C. POLK, JR. (Louisville, Kentucky): This is an extraordinarily innovative resurrection of an old idea. I simply wanted to ask Dr. Stone one question. We recognize the relatively good-prognosis polyuric form of renal failure as being a favorable

situation further defined here. However, there is the oliguric variant with a very poor prognosis, as he showed, which more often than not seems to be associated with infection. I wonder if he has been able to show, either in the laboratory or in man, the ability to convert the poor-prognosis, oliguric form of renal failure into the better polyuric form, in an individual kidney, by decapsulation applied either early or late?

DR. HARRIS B. SHUMACKER, JR. (Indianapolis, Indiana): I want to make a few remarks which, though related, deal primarily with a more general problem. I refer to the value and, more particularly, the limitations of animal experimentation.

It has long been apparent that if one can set up a reliable animal model, one can often perform well-controlled studies which may add much to our understanding of organ and body physiology and disordered states resulting from disease and injury. One must, however, recognize that species differences may entirely negate the results of such efforts.

Some years back, when Dr. Bounous and I were interested in kidneys, hypertension, stenotic arteries, and related problems, we reported studies in which decapsulation of the kidneys of many dogs was performed. In each one there quickly developed the most unbelievably thick scar about the entire kidney, often a centimeter or more in thickness, and associated hypertension. If one gave the experimental group antihistaminics after decapsulation, in sharp contrast, the laying down of a thin, delicate new capsule occurred, and, of course, no hypertension.

Since the authors, apparently, did not note any such occurrences either in the rhesus monkey or in man, this, then, is another example of the total unsuitability of the dog as a species for interpreting certain experiments performed upon them, as indicative of being valid for man.

PRESIDENT WELCH: Dr. Stone, is it possible to show that by scanning techniques the kidney actually has enlarged after decapsulation?

DR. H. HARLAN STONE (Closing discussion): I was a little worried about how this would be accepted. In fact, it had been suggested that I was setting surgery back 50 years.

I think that these procedures were carried out in the past at the wrong time or in the wrong way, and subsequently the same procedure under different circumstances has proven to be quite beneficial. The same appears to be true in regard to responses of patients who had undergone decapsulation for various reasons.

In regard to Dr. Polk's comments, I was a little uncertain as to the diagnosis in some of these previously reported patients, the true diagnosis as well as the time that decapsulation was performed. Most seemed to be more of the order of testimonials.

We did note that three patients who were anuric on the operating table did suddenly begin producing urine once we had performed a decapsulation. The delayed procedure is an interesting thought, and we have considered looking at this in the future in a few selected patients as well as in some monkeys.

Secondly, I appreciate Dr. Shumacker's kind comments. We had noted his work with the dog, and that is why we chose the monkey for our controls. We wanted to do more with the rhesus monkey, but they have become very expensive animals. The cost has now gone up to \$600 or so for each.

Finally, Dr. Welch, in regard to your question, one can get some idea on scan as to the size of the kidney. However, usually the decapsulated kidney has been placed back at a little tilt, so it always looks somewhat smaller in area, than the opposite side. Nevertheless, it almost always has more counts.