



# SURGEON'S NEWSLETTER

Joint Implant Surgery and Research Foundation

1160 North Vermont Avenue • Los Angeles, California 90029 • (213) 666-6574

AUGUST 1975

## EDITORIAL NOTE:

The reappearance in revised form of the Surgeon's Newsletter after an absence of several months calls for an editorial explanation. This can be summed up in two words; time and money.

Since the publication of our last formal newsletter issue the number of events vying for the attention of our small staff has been unprecedented. We began the year with the preparation of two new technical films on total patellar and shoulder replacement, moved directly into the presentation of our new instructional course series on the knee and from there went nonstop into a serious investigation of the problems of femoral stem breakage in total hip replacement.

In the interim we involved ourselves in JISRF-sponsored research projects on the properties of bone cement (Jet Propulsion Laboratory) and the effects of varying bony and cement support on prosthetic stems (Prototype Development Associates). These projects, in turn, gave rise to at least three new papers, another film and a scientific exhibit to be presented this winter in New Orleans. That accounts for our time. The money normally spent on newsletter publication and mailing went also into research, which seems to get more expensive all the time.

Our new less formal format is designed to make it easier for us to produce the newsletter and, incidentally, will save a little money.

There is certainly a lot of newsworthy information to report this issue and so we won't bore you further with the details of our trials but will get right to it.

## TOTAL SHOULDER REPLACEMENT:

In response to the small but consistent need for a true total shoulder replacement, Dr. Bechtol has developed a two-piece implant based on the original HJB prosthesis.

The new device consists of a stainless steel humeral component which is quite similar in appearance to the HJB prosthesis. The glenoid component of high density polyethylene is patterned on the contours of the natural glenoid. Both parts are cemented into place in the same manner as total hip components.

The total shoulder device, according to Dr. Bechtol, presented a rather simple set of design criteria as it encompassed none of the major weight bearing or stability problems seen in the knee or hip. The main cautions to be exercised in selecting patients for shoulder replacement center on the presence of an intact rotator cuff and of sufficient bony stock in the proximal humerus and, particularly, in the glenoid to support the implant parts. The complete bony glenoid should be present. Damage to the upper humerus to the level of the surgical neck can frequently be compensated.

The surgery itself is quite simple when compared to total hip or knee replacement and, with the exception of trial implant components, requires only simple instrumentation of



To the concerned practitioner interested in making a reliable assessment of the problem of total hip failures, we must point to the clinical evidence as the only reliable indicator of prosthetic performance available.

NOTE: JISRF's 18 minute film relating Dr. Bechtol's clinical and laboratory findings on the subject is now available. The film covers causes, recognition and management of stem failures.

#### **PATELLAR REPLACEMENT:**

Increasing experience with the Patello-Femoral Joint Prosthesis is demonstrating the usefulness of this implant as an adjunct to total knee replacement in a number of situations.

It has been found, for instance, that some knee patients without previous patellar complaints have developed noticeable pain in the patella following knee replacement. Investigation of these cases leads us to believe that limited function and pain in the knee itself often effectively masks patellar problems prior to total knee replacement. Only after a good range of motion is re-established with the total knee implant are the patellar problems isolated and noted.

Installation of patello-femoral joint replacements as a secondary procedure in a small number of such cases has resulted in a pain-free joint. For this reason, we have now expanded our indications for patellar replacement to include patellae exhibiting significant osteophyte formation and absence of articular cartilage at the time of total knee replacement.

For those patients in whom the advisability of patellar replacement is questionable, we prefer to wait until we have had a chance to observe the postoperative progress of the total knee alone. Patellar replacement, if needed, is then performed as a secondary procedure.

#### **1975-76 SURGICAL COURSE SCHEDULE:**

The newly published schedule of JISRF course on total joints includes separate weekend presentations on the hip and the knee as well as two week-long resort courses of the type that have been so popular in the past.

The weekend course on total hip replacement will be presented in Chicago and Los Angeles in October, 1975 and June, 1976. The total knee course will be given in the same cities in November, 1975 and May, 1976 affording interested surgeons the opportunity to obtain JISRF's full instructional format on weekends. In addition to primary discussions on hips or knees, each course includes technique presentations on other joint implants such as the shoulder, ankle and patella.

Resort courses in this series are scheduled for Sun Valley, Idaho the first week in March and in Southampton, Bermuda the first week in May. These courses with morning sessions Monday through Friday cover both the hip and knee as well as other joints in a completely updated format. Complete details on all courses are available from the Foundation.



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the type readily available on most hip trays. A motor saw, osteotomes, curettes, drills and the splined hip reamer designed by Mr. John Charnley comprise the primary armamentarium for shoulder replacement.

In the limited number of cases thus far operated, Dr. Bechtol has been able to achieve restored shoulder function to 90° of abduction. Relief of pain has been significant. One of the first patients operated loosened his glenoid component as the result of a violent exercise program undertaken against advice, including 180° abduction during the early post-operative period. This same patient drove himself home from the hospital, a distance of some 30 miles.

Since that time the postoperative regimen has included complete immobilization of the operated joint in a Velpeau sling for six weeks. Patients are seen in the office once a week during this period for manipulation of the shoulder to 90°. This has proven an effective means of preventing adhesions during the healing period.

We have just completed a set of surgical technique sheets on the shoulder operation and will be happy to send you one on request. Our film on the technique is available through the manufacturer at no cost or may be obtained from us for a nominal rental fee.

#### EVALUATING TOTAL HIP FAILURES:

In the midst of a growing concern over reported instances of prosthetic stem failures in total hip patients, the limited store of data and literature on the subject has generated widespread interest.

Briefly, the available information falls into two categories: reports of clinical experience and independently published technical reports showing strength figures for various prosthetic metals tested in the laboratory. While there are reports from some centers of stem failure rates as high as ten percent, the reasons for these inordinately high total hip failure rates have not been clearly established and they are at odds with the majority of the reports in the literature.

Our six-year clinical experience is soon to be published and reflects a success rate of 99.55% in 1087 Bechtol and Charnley total hips. This study shows a close correlation between inadequate bony support in the femur and stem failure with no evidence that metallurgical faults were a factor. A report published in an internal bulletin from Wrightington Hospital in England by John Charnley in November of 1974 shows similar findings in his series of 8500 total hips operated over a twelve year period.

The independently published and circulated laboratory test figures, however, would seem to be in conflict with clinical findings in that they show wide variances in strength among different commonly used implant metals. This seeming contradiction occurs for the simple reason that implant materials behave entirely differently on the laboratory test bench than when immersed in highly corrosive body fluids. Strength characteristics that appear impressive for metals tested in air lose their validity in the hostile environment of the body. Significantly, those characteristics of metals known to be advantageous to implants in corrosive medium (such as ductility, notch and corrosion resistance) are missing from the reports in question.

Since no reliable means of quantifying in vivo performance characteristics of implant materials in the laboratory exists, we feel that such tests bear little significance to the clinical problem of stem breakage among total hips. This is borne out by the fact that laboratory test results now being circulated would lead us to expect a far higher failure rate for certain types of metal stems than has thus far been clinically demonstrated. Conversely, there should be a far lower rate of failure among implants of those metals rated superior in the laboratory than has actually been the case.





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