Zimmer advertisement.

[s.l.]: [s.n.], 1974

Revised: October, 1976

TRAPEZOIDAL-28®
HIP REPLACEMENT SYSTEM

IMPORTANT NOTE—IT IS IMPORTANT TO INSERT THE LARGEST STEM POSSIBLE TO MINIMIZE THE LOAD PER UNIT AREA (STRESS) ON THE STEM. A SNUG MECHANICAL FIT MUST BE ESTABLISHED BY PACKING THE FEMORAL CANAL WELL WITH ACRYLIC CEMENT WITH PARTICULAR ATTENTION TO THE CALCAR REGION. AVOID VARUS STEM PLACEMENT, IF POSSIBLE.

DESCRIPTION

The TRAPEZOIDAL-28 Total Hip Replacement offers a wide selection of implant components. The trapezoidal contour of the femoral neck allows for maximum flexion and external rotation without neck-socket impingement. The femoral stem is topped by a platform or flange for acrylic impaction.

ZIMMER Certified Stainless Steel (Premium Quality 316L, cold-worked) is used for the femoral components. Each is designed with a 28 mm diameter head with several neck lengths and stem size variations.

There are corresponding ultra-high molecular weight (UHMW) polyethylene acetabular cups available in four outside diameters, all equipped with a one piece radiographic wire directed both equatorially and over the pole. The cups are double peel packaged and radiation-sterilized (See Sterility Section).

INDICATIONS

Total hip replacement is indicated (1) in cases of failed prosthesis—persistent or recurrent pain and/or physical impairment following conventional arthroplasty techniques, (2) in difficult clinical management problems where experience has dictated that more conventional arthroplasty techniques are not likely to achieve satisfactory results or where arthrodesis is contraindicated because of age, sex, occupation, or height of the patient, (3) poor bone stock which is inadequate for other reconstructive procedures, which is indicated by deficiency of the femoral head, neck or acetabulum, and (4) generalized illness or infirmity indicating physiologic age beyond 60 years.

CONTRAINDICATIONS

Overt infection is an absolute contraindication and every effort should be made to rule out the possibility of preoperative sepsis in a patient who has one or more of the following abnormalities: (1) fever and/or local inflammation signs, (2) rapid joint destruction or bone absorption on roentgenograms, and (3) elevation of sedimentation rate unexplained by other diseases, elevation of WBC count, or more marked shift in differential count.

Additionally, distant foci of infection, such as genitourinary, pulmonary, skin, etc. are a relative contraindication since hematogenous spread to the implant site may occur.

Use of this implant is contraindicated where loss of musculature or neuromuscular compromise in the affected limb would render the procedure unjustifiable.

Congenital dislocation of the hip is a relative contraindication as sufficient bone may not be available to support the acetabular cup.

WARNINGS

It is important to insert the largest stem possible to minimize the load per unit area (stress) on the stem. A snug mechanical fit must be established by packing the femoral canal well with acrylic cement with particular attention to the calcar region. Avoid varus stem placement if possible.

IMPROPER IMPLANT SELECTION, INSERTION, PLACEMENT, OR INADEQUATE CEMENT SUPPORT OR EXCESSIVE MUSCULAR ACTIVITY WILL PLACE UNUSUAL STRESSES ON THE IMPLANT AND MAY RESULT IN SUBSEQUENT FRACTURE OF THE FEMORAL STEM.

For safe and effective use of this implant, the surgeon should be familiar with the implantation procedure for the device (See Implantation and Utilization Section).

Careful consideration to the body weight and postoperative physical activity is warranted whenever the patient's bone structure necessitates usage of a small or thin stem femoral component. The physician must be aware that the possibility of a stem fracture in the femoral component increases as body weight and physical activity of the patient increases. It is therefore prudent to advise these patients to limit their activity level and to follow a weight reduction program.

In every case, accepted surgical practices should be followed meticulously in postoperative care. The patient must be impressed with the dangers of excessive muscular activity. The patient must be made to realize the limitations of the prosthesis and should be instructed to govern activities accordingly.

PRECAUTIONS

An implant should never be reused. Even though the implant may appear undamaged, it will be fatigued from previous stresses and may have developed imperfections which may lead to early fracture of the implant.

Proper handling of any implant is important. Contouring of an implant should be avoided. An alteration of this type will produce stresses and may cause defects which could become the focal point for implant fracture.

ADVERSE EFFECTS

Fatigue fracture of the femoral stem has been reported. Stem fracture is more likely to occur in the heavy, physically active individual with small, poor quality bone. Another factor to consider is joint disability in the opposite extremity which places an additional load on the prosthesis.

Peripheral neuropathies have been reported following total hip arthroplasty. Subclinical nerve damage occurs more frequently, possibly the result of surgical trauma.

Metal sensitivity reactions in patients following total joint replacement have been rarely reported. The significance and effects of sensitization await further clinical evidence and evaluation.

Dislocation can occur on recovery from the anesthetic when the acetabulum or prosthetic head are inaccurately positioned. Muscle and fibrous tissue slackness can also contribute to dislocation.

Foreign material in tissues adjacent to implants results in histological reactions involving various sizes of macrophages and fibroblasts. The actual clinical importance of this effect is uncertain, as similar changes may occur as a precursor to, or during the healing process.

UTILIZATION AND IMPLANTATION

In order to assist in preoperative planning, templates of the various stem sizes and neck lengths are available. The appropriate choice of the implant and screening of patients are two important factors. Any condition (ie, senility, mental illness), which could cause the patient to ignore the necessary post-implantation limitations or an excessive muscular activity level inherent with the patient's occupation or life-style could lead to complications or implant failure.

NOTE: Surgical technique (B-161) available upon request.

STERILITY

Sterilize the femoral component by autoclaving in the accompanying specially designed Zip Case, after removing all paper and foam inserts. Do not remove prosthesis head cover until ready for implantation. Always store prosthesis in Zip Case. Do not touch the head of the prosthesis or allow contact with other objects.

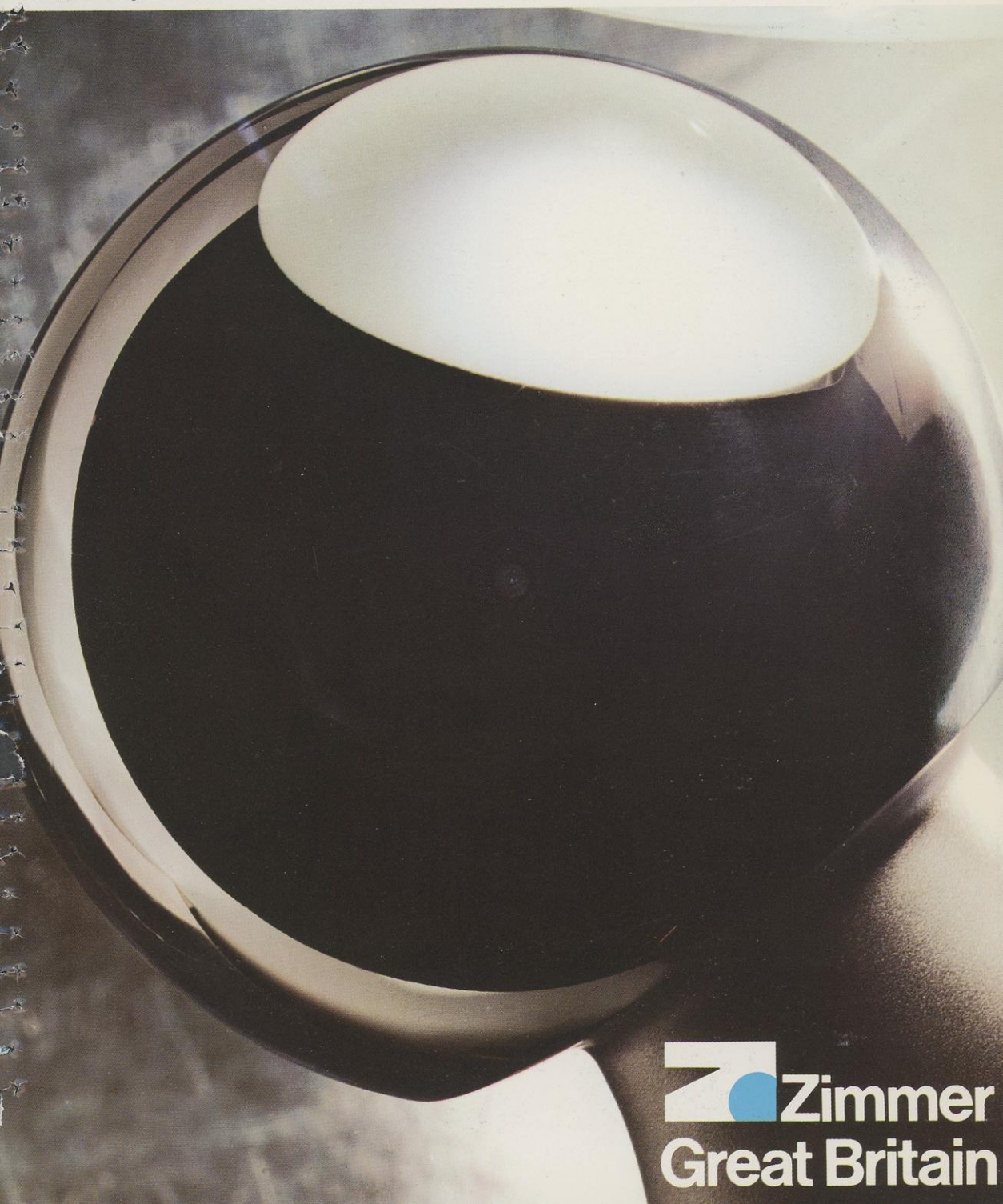
NOTE: Keep prosthesis head protected until final installation.

The acetabular cup has been sterilized by a minimum of 2.5 Mrad of gamma irradiation to provide sterility throughout the material. Resterilization by any method is not recommended. Repeated irradiation may cause degradation of the material. Autoclaving, dry heat or boiling will warp or shrink the UHMW polyethylene and preclude usage. While resterilization with ethylene oxide or cold liquid sterilant may not harm the acetabular cup, safe levels of residues and proper aeration times have not be established.

ZIMMER·USA

Alivium
vacuum melt, vacuum cast total joint replacements

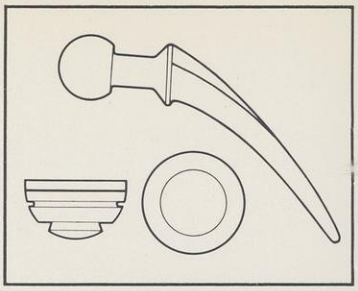
Alivium vacuum melt, vacuum cast, cobalt - chromium - molybdenum alloy complies with B.S. 3531 : 1968 and A.S.T.M. F75 : 1967
Alivium is the registered trade mark of Zimmer Great Britain.



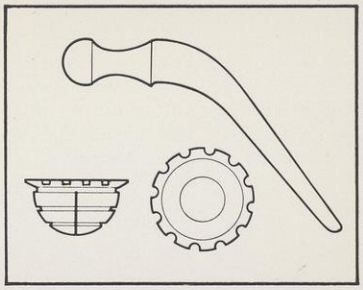
Zimmer
Great Britain

Müller-Charnley type total hip replacement

This type of femoral component with 32mm diameter head has been used in combination with H.D. Polyethylene Acetabular Cups since 1966. The standard 50mm O.D. Acetabular Cup meets the anatomical requirements of the majority of patients while the 44mm O.D. cup is used when the ilium is narrow in cases of high dislocation, with migration of the acetabulum. Two larger sizes of cups 58mm and 54mm O.D. have been added to the range to meet the special requirements of large boned patients. Particular attention is paid to the precision machining and surface finish of the acetabular component so that, when combined with Alivium femoral component, an exceptionally stable total hip replacement is achieved with minimal risk of dislocation and minimum wear rate on the acetabular component.



Charnley low friction arthroplasty



Total reconstruction of the human hip by replacement with artificial articulation is now accepted as a relatively safe surgical procedure. This operation, first used in 1958, has been practised since 1962 with only minor modifications.

The Alivium Charnley type Femoral Components are available in three stem thicknesses and are combined with Acetabular Cups 44mm and 40mm O.D.

The near-perfection of the geometry of the femoral head combined with the thick-wall acetabular cup provides a very low friction arthroplasty for long term implantation.

The use of Alivium vacuum melt, vacuum cast cobalt – chromium – molybdenum alloy ensures a purity of implant which is completely inert in body fluids and tissue.

H.D. Polyethylene acetabular cup

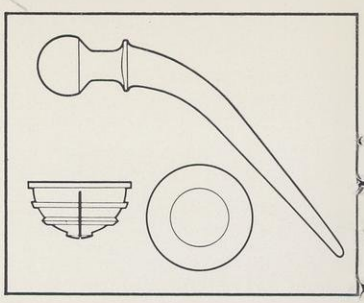
Charnley type total hip replacement

Stanmore total hip replacement

The Stanmore Total Hip Replacement technique offers many distinct advantages, not the least of which is that the posterior operative approach is a satisfactory mode of access which does not require the removal of the greater trochanter.

1. A range of femoral components with head diameters 25, 29 and 35mm.
2. Acetabular cup sizes 45, 50, 53 and 57mm O.D. are available.
3. Configuration of the prosthesis stem achieves optimum position in the femur.
4. Range of movement permitted by the femoral head – 105°.
5. Instrumentation – minimal and economic.

Developed in the Institute of Orthopaedics (University of London)
Royal National Orthopaedic Hospital, London and Stanmore.



Zimmer GREAT BRITAIN

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Zimmer Orthopaedic (Australia) Pty. Ltd.,
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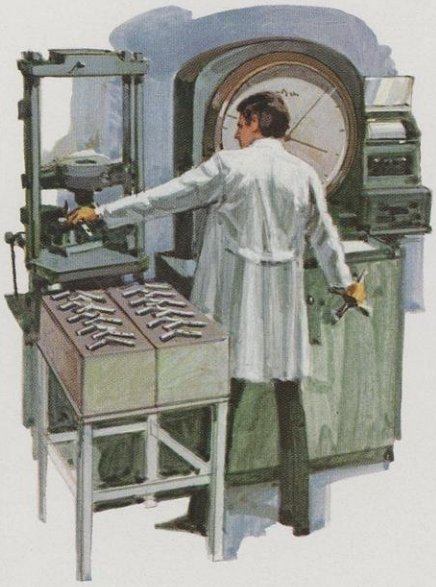
Engelsk-Dansk Hospitalsforsyning A/S,
Laurentsvej 28, 2880 Bagsvaerd,
København, Denmark.

Zimmer Orthopaedic S.A. de C.V.
Calle 2, No 29 San Pedro de los Pinos,
Mexico 18 D.F.

Tivanium™, our newest alternative to some very traditional problems.

Tivanium (Ti - vain - e - um) is our name for a new Titanium 6Al 4V Alloy having excellent fatigue resistance, low modulus of elasticity, and a high degree of tissue compatibility and corrosion resistance.

For the last several years we have been conducting exhaustive testing and development of Tivanium. The results of this investigation, along with the experimentation and investigation by other researchers in the field, indicate that the inherent properties of Titanium 6Al 4V Alloy offer potential value in the design of specific implants.



To assist you in your own evaluation of Tivanium we have prepared a detailed reference booklet. Please ask your Zimmer representative for your free copy.

Tivanium™

ZIMMER · USA
Warsaw, Indiana 46580

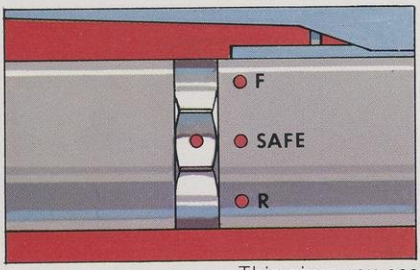
we've taken the hall® air driver and improved it. we'd like to prove it

We didn't change the Hall Air Driver simply to make a change. We made some very important improvements—inside and out. Of course, the changes don't really *look* dramatic, because we started with an exceptionally fine piece of equipment. We went over it, part by part, to see what we could do to make each part better. When we finished, we had a superior air driver.

subtle changes improve the feel

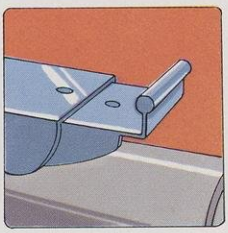
A wear resistant attachment surface. We put a super-hard coating on the business end of the air driver to make it easier to put on and remove attachments. All the attachments which fit the previous model Hall Air Driver will fit the new design, of course.

A new throttle design. We lengthened the throttle and squared off the edges to give you closer, surer finger tip control of the driver's speed.



An improved direction selector. We replaced the lever with a circular thumb-activated ring, and added a more positive safety setting. This gives you easier and more positive control over the settings.

A dual purpose safety slide. To deactivate the instrument, and give you a positive visual check that it is non-operative. The new design also allows the throttle to lay flat against the housing during sterilization and storage.



A detachable hose. The quick-disconnect fitting makes it easy to separate the hose from the handpiece for cleaning, sterilization, or service.

a new osteotomy saw for fast bone removal

We also designed a new Osteotomy Saw for use with the new Hall Air Driver. The saw provides up to 40,000 strokes per minute, in line with the handpiece. This results in positive control and good observation of the surgical site.

A push-button allows you to quickly change or reorient the blade without wrenches or other tools. The splined shanks on the attachment permit varying orientation in the collet in 30° increments.

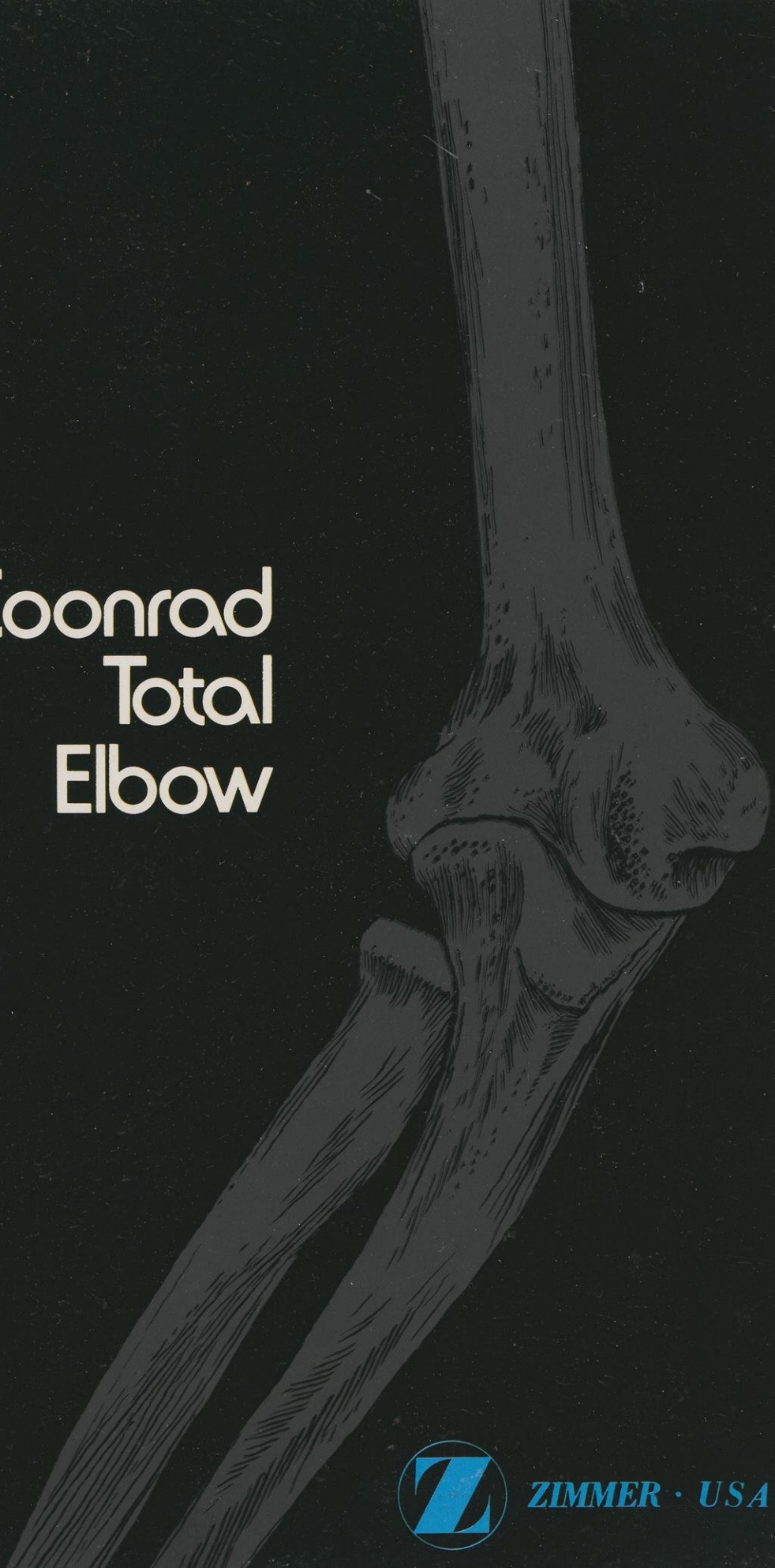
We also designed new blades that are stronger and more rigid to reduce whipping at high speed.

Ask your Zimmer man to show you the new Hall Air Driver and the osteotomy attachment. Hold it. Handle it. There's no better way to prove to you that our improvements give you a more precise feel. And greater control.

the new hall® air driver

ZIMMER · USA
Warsaw, Indiana 46580

Coonrad Total Elbow



ZIMMER · USA

Coonrad Total Elbow

A versatile total elbow prosthesis allowing selective preservation of epicondyles and the olecranon that is generally indicated for use with traumatic loss of elbow stability or bone substance, advanced rheumatoid or degenerative arthritis with incapacitating pain or loss of motion where the degree of joint damage precludes lesser procedures, and bilateral elbow ankylosis from many causes other than sepsis.

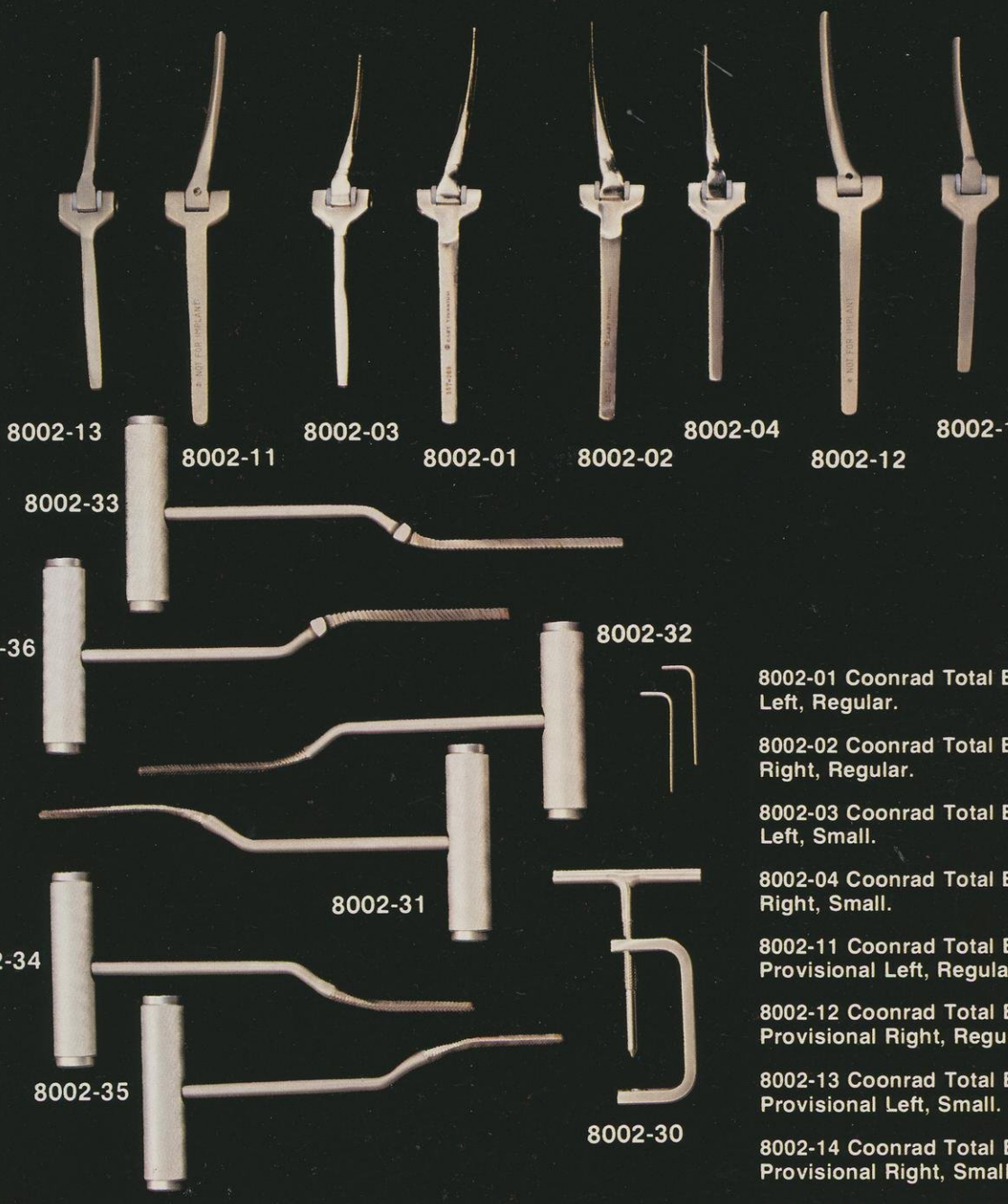
Specific contraindications include any condition in which the function of the hand is poor and neurovascular damage is severe enough to make any improvement unlikely. Prior joint infection or osteomyelitis are contraindications and excessive scarring of the skin making adequate soft tissue coverage impossible would also adversely affect the success of the procedure. This type of prosthesis should not be considered in any patient involved in heavy labor, torsional stress or competitive sports where fusion would likely be preferable.

Available in both standard and small sizes with complete instrumentation. Right and left ulnar components curve to facilitate implantation and establish correct anatomical carrying angle. Anteverted hinge approximates anatomical hinge location, minimizing reorientation of muscle forces and skin slough complication. Stem design minimizes possibility of prosthetic rotation in the humerus or ulna. The ulnar and humeral stems and hinge pin are manufactured of Tivanium (a Ti-6Al-4V alloy of titanium) shielded by ultra-high molecular weight polyethylene bushings to prevent metal-to-metal contact.

Suggested References:

- Ralph W. Coonrad, *Coonrad Total Elbow Surgical Protocol*, Zimmer•USA, November, 1975.
- John W. Goodfellow and Peter C. Bullough, *The Pattern of Ageing of the Articular Cartilage of the Elbow Joint*, *JBJS*, vol. 49B, no. 1, February 1967, pp. 175-181.
- William A. Souter, *Arthroplasty of the Elbow, with Particular Reference to Metallic Hinge Arthroplasty in Rheumatoid Patients*, *Orthopedic Clinics of North America*, vol. 4, no. 2, April, 1973, pp. 395-413.
- Roger Dee, *Total Replacement of the Elbow Joint*, *Orthopedic Clinics of North America*, vol. 4, no. 2, April, 1973, pp. 415-433.

the Coonrad instrumentation



8002-01 Coonrad Total Elbow, Left, Regular.

8002-02 Coonrad Total Elbow, Right, Regular.

8002-03 Coonrad Total Elbow, Left, Small.

8002-04 Coonrad Total Elbow, Right, Small.

8002-11 Coonrad Total Elbow, Provisional Left, Regular.

8002-12 Coonrad Total Elbow, Provisional Right, Regular.

8002-13 Coonrad Total Elbow, Provisional Left, Small.

8002-14 Coonrad Total Elbow, Provisional Right, Small.

8002-30 Coonrad Total Elbow, C-Clamp.

8002-31 Coonrad Total Elbow, Left Ulnar Rasp, Regular.

8002-32 Coonrad Total Elbow, Right Ulnar Rasp, Regular.

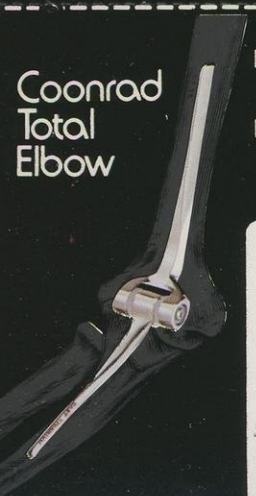
8002-33 Coonrad Total Elbow, Humeral Rasp, Regular.

8002-34 Coonrad Total Elbow, Left Ulnar Rasp, Small.

8002-35 Coonrad Total Elbow, Right Ulnar Rasp, Small.

8002-36 Coonrad Total Elbow, Humeral Rasp, Small.

Coonrad Total Elbow



- ☐ Please send me a complete Surgical Protocol for the Coonrad Total Elbow.
- ☐ Please have my Zimmer representative arrange to show me the Coonrad Total Elbow Surgical Protocol Audiovisual Program.

Name

Institution

Address

City State Zip

Surgical protocol

The Coonrad Total Elbow procedure is most frequently carried out with the patient supine and the arm positioned across the chest. Alternately, the patient may be positioned prone with the elbow flexed over a small table. A topical antibiotic (generally either a Neomycin or Bacitracin solution) is used with irrigation intermittently during surgery, with the patient prepped with Betadine and appropriately draped. Tourniquet hemostasis is carried out with approximately 300 mm. of mercury for a period not to exceed two hours. Pressure is checked before, during, and after the procedure. A straight posterior, postero-lateral or postero-medial incision is made (Fig. 1) and the ulnar nerve identified and protected, or mobilized and transplanted away from the major operative site. Hemostasis should be controlled with electrocautery.

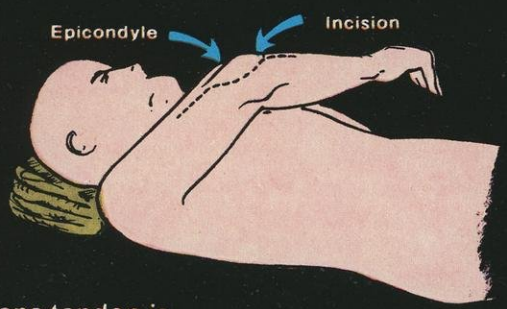


Fig. 1

The triceps tendon is preferably split over the olecranon and retracted half medially and half laterally, or detached intact from the olecranon, making sure to preserve all soft tissue and periosteum for later anatomical reattachment. Alternately, the triceps tendon may be left intact and bluntly or sharply dissected in continuity with the periosteum away from the olecranon, and later replaced. (See Fig. 2)

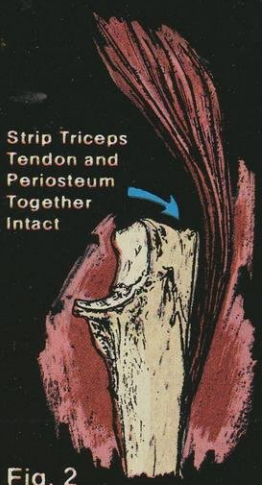


Fig. 2

The distal humerus and proximal ulna are totally stripped of soft tissue subperiosteally. Joint cultures are taken immediately after opening the joint capsule. Bone removal from the proximal ulna gives excellent exposure and can include almost the entire olecranon and notch, using either a small osteotome or a Hall® Air Driver/Osteotomy attachment with appropriate Osteotomy saw blade (See Fig. 3a). An alternative resection removes the articular surfaces while preserving the major portion of the olecranon. (Fig. 3b)

Fig. 3a

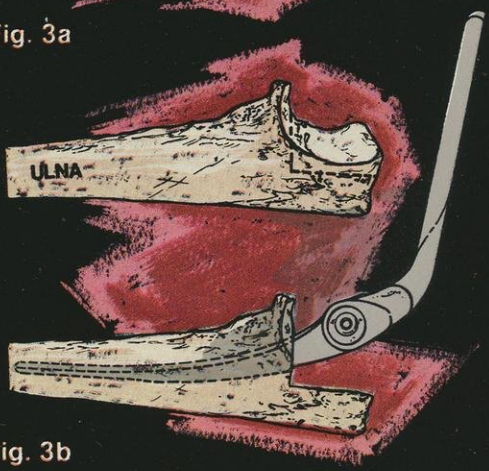


Fig. 3b

Bone removal from the distal humerus can include both epicondyles to a level just proximal to the flaring so as to correctly seat the humeral stem (Fig. 4 & 4a). Or, preferably, the central notch may be removed from the inter-epicondylar region to "tailor" the bone contours to fit the shoulder portion of the prosthesis' stem (Fig. 5 and 5a). This second alternative affords less chance of humeral loosening of the prosthesis and creates more bony covering of the prosthetic hinge mechanism.

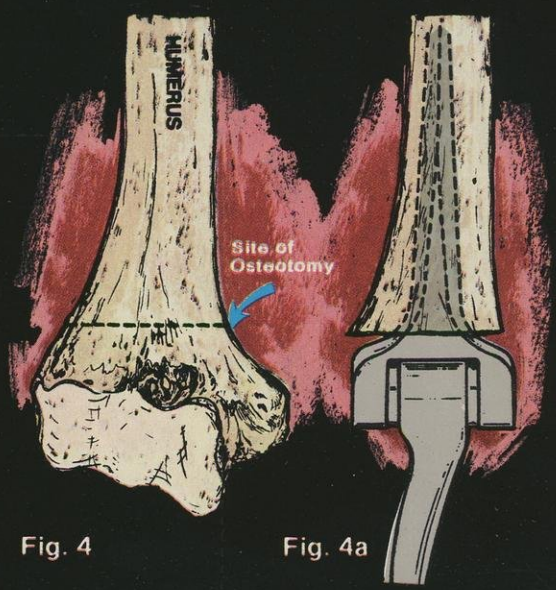


Fig. 4

Fig. 4a

Fig. 5

The amount of bone removed should be sufficient to permit full elbow motion on the operating table when the appropriate provisional prosthesis is fully inserted and the surgeon is further cautioned to check for full range of elbow motion at appropriate times during the surgery. Special rasps are provided in both regular and small sizes for contouring the humeral and ulnar intramedullary canals prior to test insertion of the appropriate corresponding regular or small size provisional prosthesis. Right and left ulnar rasps (Fig. 6) correspond to the ulnar configuration of the matching right or left prosthesis. The regular and small humeral rasps are used for preparation of either the right or left humeral intramedullary canal (Fig. 7).

The implantable prosthesis (8002-01, Left-Regular; 8002-02, Right-Regular; 8002-03, Left-Small; 8002-04, Right-Small) *should not be disassembled* ordinarily during the procedure and is inserted intact into the prepared medullary cavities of the humerus and ulna at the same time with the elbow acutely flexed. (Fig. 8)

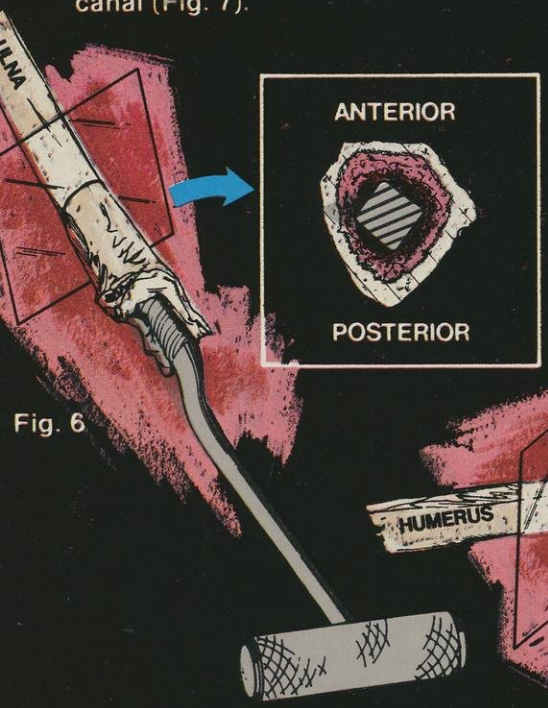


Fig. 6

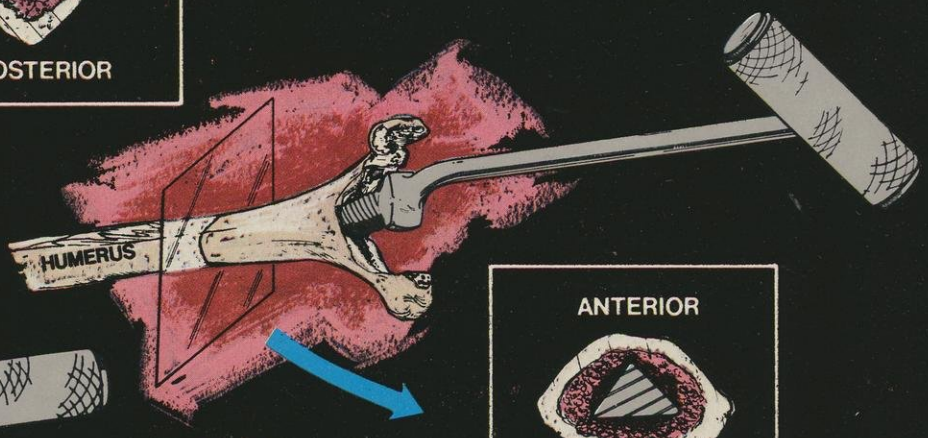


Fig. 7

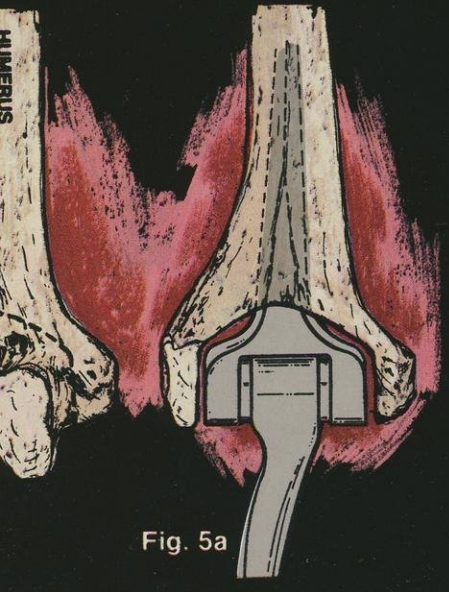


Fig. 5a

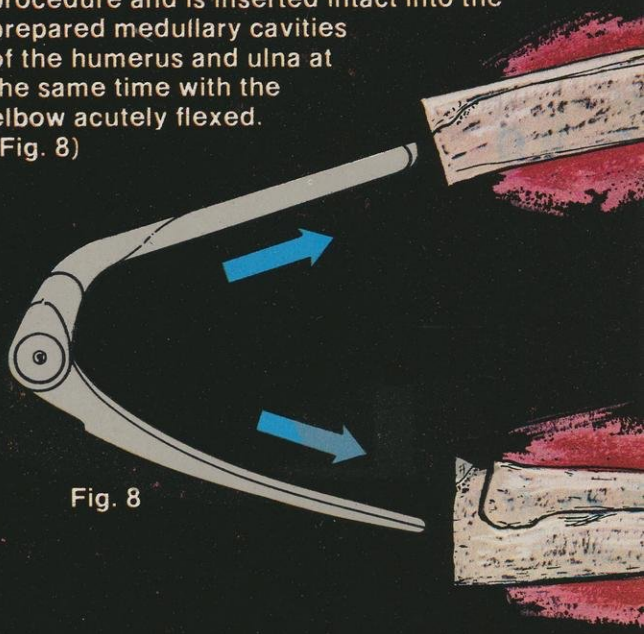


Fig. 8

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In rare instances, it may be necessary to disassemble the prosthesis. A C-clamp (8002-30) is provided to force the hinge pin out of the bushings for disassembly and to reinsert the pin after the stem components are placed *in situ* (Fig. 9) The hinge pin is removed from lateral to medial on the left prostheses (8002-01,-03) and from medial to lateral on the right prostheses (8002-02,-04). On insertion, a distinct snap is heard when the hinge pin seats itself in the ultra-high molecular weight polyethylene (UHMWPE) bushings. Repeated assembly and disassembly of the implant is not recommended as the retention power of the bushings may become compromised. Use of a provisional prosthesis will indicate whether or not the implantable prosthesis must be disassembled for separate insertion to the humerus and ulna.

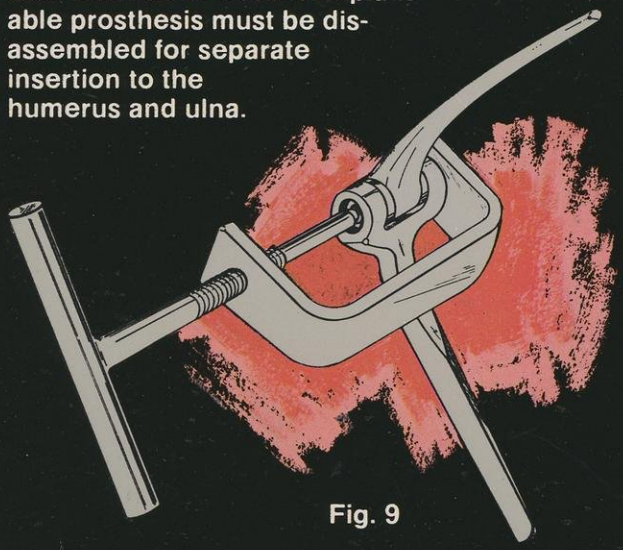

Fig. 9

The provisional prosthesis can be used to test the range of motion and the carrying angle. (See Fig. 10) *(A full range of motion must be achieved at this time.)* If motion is limited, added bone removal from the ulna, humerus or both may be indicated. Bone cement is then prepared and inserted into both medullary canals.

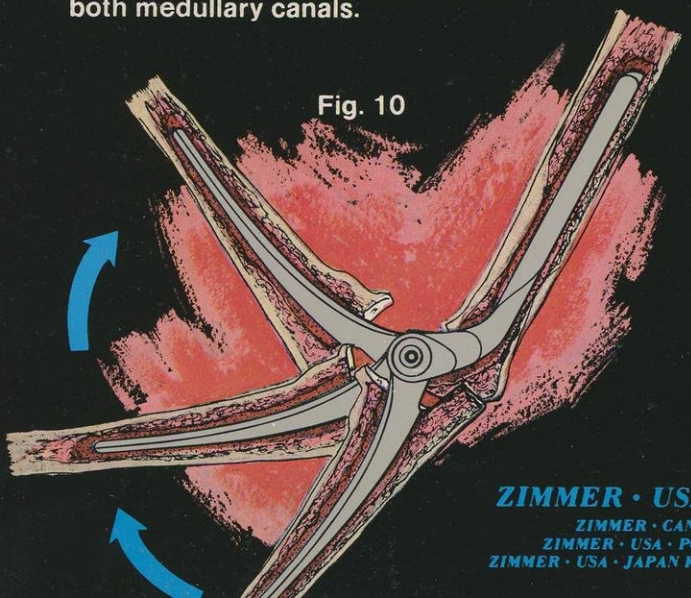

Fig. 10

The appropriate *implantable* prosthesis is then simultaneously inserted into both the humeral and ulnar medullary canals (See Fig. 11) and the joint extended while the bone cement hardens, thus seating the stems of the prosthesis. Excess bone cement is then cleaned away with an osteotome from the bone margins.

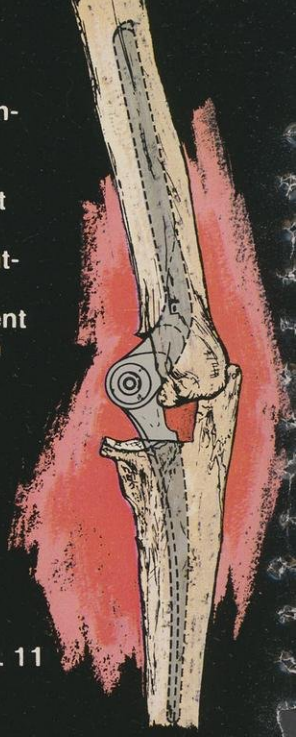

Fig. 11

If the radial head limits rotation or impinges on the prosthesis, it should be excised. Otherwise, it is left undisturbed.

At this point, it is appropriate to stress several important implantation steps: First, the *amount of bone removed from the humerus and ulna must permit full elbow motion with the prosthesis inserted.* Second, the prosthesis will be inserted with the elbow acutely flexed and the prosthesis *preferably* fully assembled. Next, the ulnar and humeral stems should be viewed to ensure that the prosthesis is *fully* seated in each medullary canal. Finally, polymerization of the bone cement should occur with the elbow fully extended.

The joint capsule is closed with the triceps snugly sutured with nonabsorbable suture material and the ulnar nerve transferred subcutaneously if it appears that there is danger of interference between the ulnar nerve and the prosthesis. The remainder of the wound is then closed in anatomical layers with Snyder Hemovac closed system drainage inserted through the skin flap paralleling the incision. The wound margins are again prepped with Betadine and a dry dressing applied.

A bulky compression dressing using 5-6 layers of sheet cotton is applied with the elbow in 90° flexion and a posterior shell plaster cast added.

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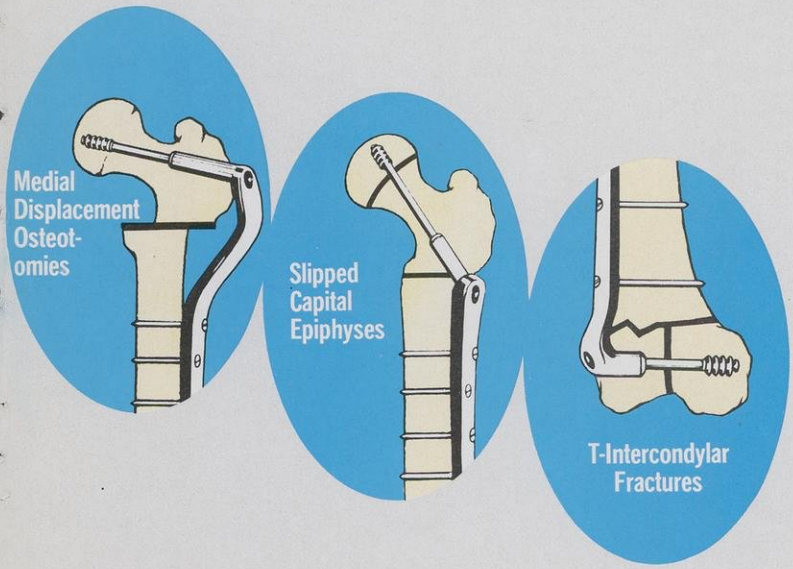
The ZIMMER® Compression Hip Screw provides the surgeon with a reliable total management approach to hip fixation . . . a complete, evolved system of implants and instrumentation for: Stable and Unstable Intertrochanteric Fractures; Basicervical Fractures; Slipped Femoral Capital Epiphyses; Varus; Valgus; or Medial Displacement Osteotomies; and Arthrodeses.

For the surgeon, the collapsible (sliding) feature of the ZIMMER Compression Hip Screw and the many interchangeable lag screws and plate length/plate angle combinations afford the flexibility needed in surgery.

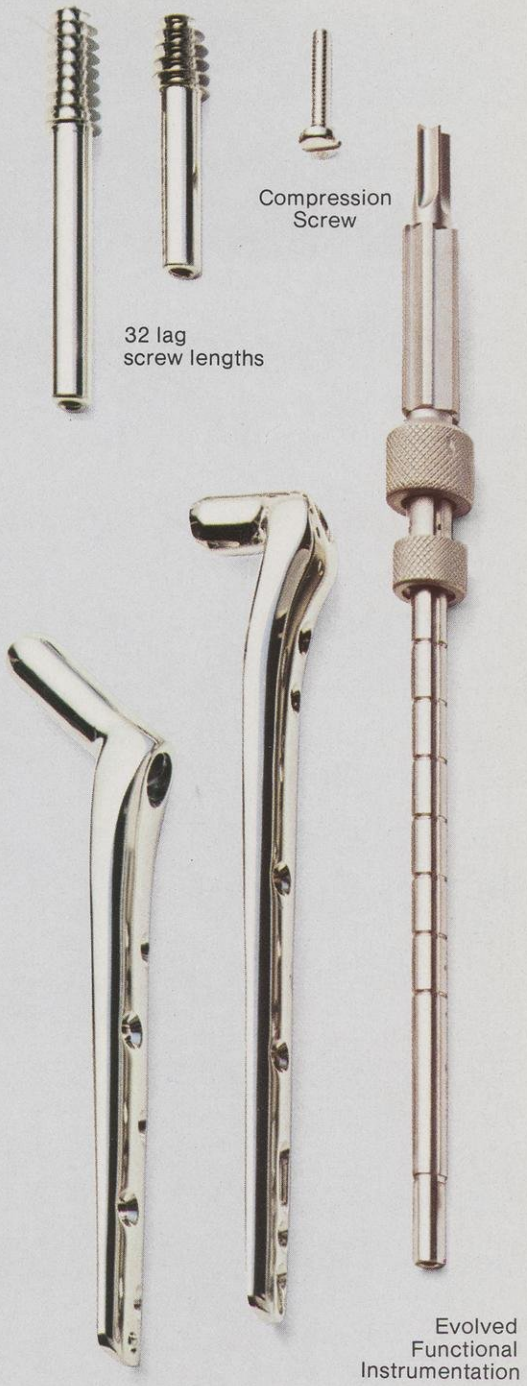


For operating room personnel, the ZIMMER Compression Hip Screw offers efficiency through standardization in set-up, anticipation of the surgeon's step-by-step requirements and a complete system.

The versatility of this concept extends application to T-Intercondylar Fractures of the Distal Femur. Compression and rigid fixation can be achieved in two planes . . . across the vertical fracture line and between the shaft/condylar fragments. Fixation requires only a 90° angle side plate. All lag screws and instruments remain the same . . . therefore, the basic operative technique and staff involvement are known and understood.

The ZIMMER Compression Hip Screw is only one of an extensive line of internal fixation systems available from ZIMMER • USA. For complete information, just ask your ZIMMER representative.

Not recommended for sub-trochanteric fractures.



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