PATELLAR TREATMENT IN REVISION TOTAL KNEE ARTHROPLASTY

R.S.J. Burnett, M. Franco, A. Baldini, R.L Barrack

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The patella is often addressed at the end of the surgical procedure in revision total knee arthroplasty (TKA), due to focus on the other aspects of the revision of the femur and tibia during the procedure. Preoperatively, patients with TKA patella-related problems often present with anterior knee pain and maltracking (Figure 16.1). The etiology of these symptoms must be recognized and investigated prior to revision TKA, as the symptoms may be multifactorial in etiology, and may not be specifically a patella problem. In the preoperative evaluation of patellar revision in TKA, the surgeon should assess femoral and tibial component external rotation, as this may contribute to patellofemoral maltracking. Patellar management in revision TKA is contingent upon the condition of the patella host bone, stability of the existing patellar component, integrity of the patellar component polyethylene (and/or metal backing), and status of the extensor mechanism complex. In this chapter, we describe the techniques and surgical principles for managing the patella during revision TKA.

INDICATIONS AND CONTRAINDICATIONS

The indications for revision of the patellar component include: aseptic patellar component loosening, periprosthetic patellar fracture with a loose patella implant, severe patellar component polyethylene wear (delamination, cracking, fragmentation) that is unsuitable for component retention, TKA infection requiring removal of implants, and metal-backed patellar components with significant or impending polyethylene wear through to the metal backing (with secondary metal contact of the implant against the femoral component resulting in burnishing of the femoral component trochlear groove, synovial metallosis, squeaking, and grinding). In patients presenting osteonecrosis of the patella with a well-fixed patellar component, there is no indication or benefit to revising the implant (unless the implant is loose). This may in fact be contraindicated, as revision does not solve the problem of osteonecrosis, and results in further surgery and insult to the patella with the potential for complications. Patients with osteonecrosis of the patella and associated fragmentation or fracture (Figure 16.2) may have patella component loosening necessitating patella component removal. Similarly, a well-fixed patella implant in association with a patella fracture may be managed with open reduction/internal fixation of the patella and retention of the patella implant, provided that the internal fixation does not compromise the fixation stability of the patella implant (Figure 16.3). In an elderly or low-demand patient with an all-polyethylene component that is well-fixed but demonstrates wear, consideration for patellar component retention is an option, especially if the residual host bone stock is thin or of poor quality. Contraindications to patella revision include well-fixed all-polyethylene patella implants without significant wear, inavailability of appropriate implants and instrumentation for patella revision, and an unfit patient who is unable to undergo revision TKA surgery.

PREOPERATIVE PLANNING

The purpose of preoperative planning when considering how to manage the patella is to evaluate implant stability, type of existing implants, patella revision reconstructive options, and residual host-bone stock. A careful preoperative history of the knee, including prior surgical procedures, pain characteristics and knee function is required. If prior surgical procedures have been performed,

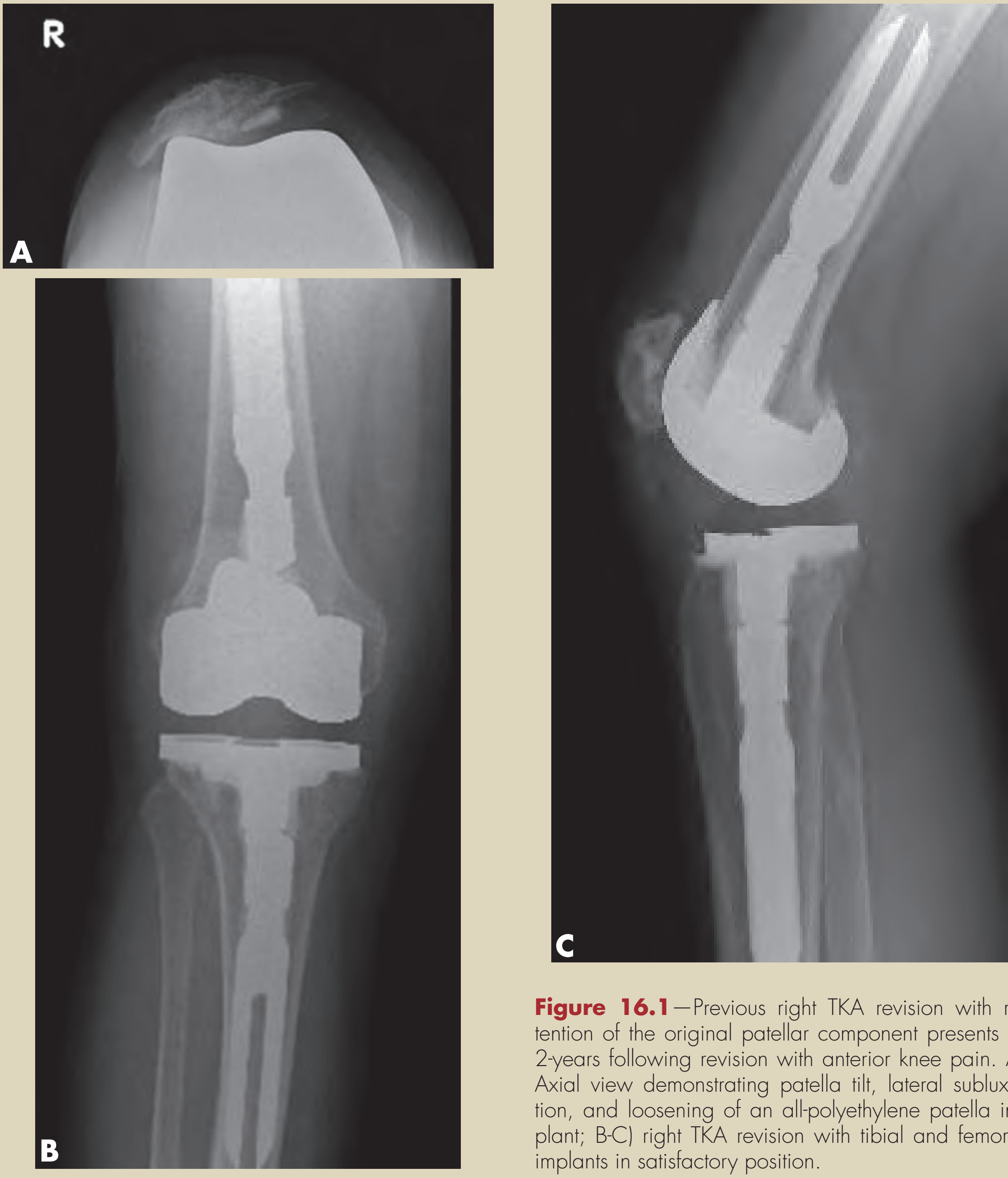


Figure 16.1—Previous right TKA revision with retention of the original patellar component presents at 2-years following revision with anterior knee pain. A) Axial view demonstrating patella tilt, lateral subluxation, and loosening of an all-polyethylene patella implant; B-C) right TKA revision with tibial and femoral implants in satisfactory position.

operative reports should be obtained in order to determine the type of procedure(s) and treatment of the patella. A physical exam of the knee and the extensor mechanism should be performed, including range of motion, stability in the coronal and sagittal plane, and AP stability. A simple active straight-leg raise test is perhaps the most useful assessment of the extensor mechanism. Knee radiographs including a patellar axial view should be performed in order to assess: preoperative pathology of the patellofemoral joint (*i.e.* before the patient underwent TKA surgery), articulation of the patella within the femoral trochlea, patellar subluxation or lateral tilt, thickness of patellar bone stock prior to TKA and after patella resurfacing, and design and fixation of patella implant. The lateral radiograph is important in evaluating preoperative patella infera/baja, level of the joint

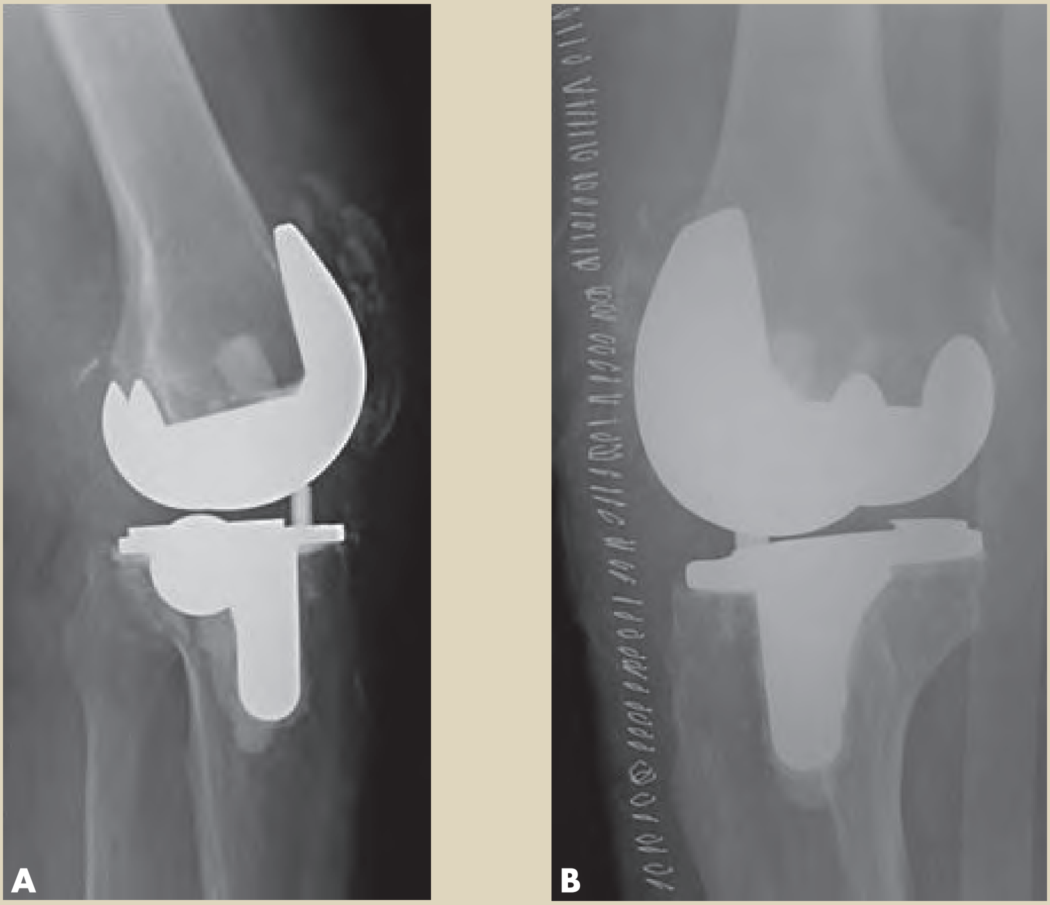


Figure 16.2—Painful TKA with anterior knee pain. A) Preoperative x-ray demonstrating patellar fragmentation and loosening of an all-polyethylene patellar component; B) postoperative x-ray following patellaplasty (patellar component removal and the fragmented patella remains unresurfaced).

line, and to assess superior or inferior pole patella enthesophytes, fractures, or fragmentation of the patella. By identifying patella baja preoperatively, the surgeon will be prepared for an exposure to the knee which may be more challenging, and alert the surgeon to the potential need for more extensile exposure techniques (Figure 16.4). Computed tomography (CT) is also useful in evaluating patellar conditions prior to revision TKA, including loosening, patella bonestock and thickness, fractures, and retained cement (Figure 16.5). CT scan is useful to assess patellar maltracking – combined (both tibial and femoral) component internal malrotation is directly proportional to the severity of patellofemoral maltracking, and must be evaluated for in TKA with patella maltracking. As a result, CT should be used to determine the presence of rotational malalignment and, subsequently, whether revision of femoral or tibial components is necessary.[1] Nuclear medicine Tc99 bonescan may be useful to assess for osteonecrosis of the patella, however, this test is frequently positive when performed within the first two years following TKA with patella resurfacing, and the results must thus be interpreted with caution.

TECHNIQUES AND RESULTS

There are a number of potential patellar management options, depending on the amount of residual bone stock, resulting in a spectrum of management for patellar treatment. Patellar management in revision TKA is based on the amount of bone loss and status of the retained patella im-

Figure 16.3—A patient who presented with a complete extensor lag at 2-years following TKA after an injury. A-B) AP, lateral X-rays demonstrate a superior pole periprosthetic fracture with superior displacement of the fragment. The cemented patella component remains well-fixed; C) postoperative X-ray after open reduction and internal fixation. Small vertical drill holes were made in the patella and the distal quadriceps and patellar fragment sutured down through the drill holes and tied at the inferior aspect of the patella. The patella component remained stable and did not require revision.

plant. Bone loss is typically due to patella component removal, osteolysis, fragmentation, or patellar bone resection in the primary TKA.[2] The most common treatments are retention of the patellar component with a well-fixed implant, revision of the patellar component (if adequate bone stock remains), or patellaplasty (implant removal and leaving the remaining host-bone unresurfaced). If there is less than 10 mm thickness of host patella bone remaining, then the surgical decision making is more complex. Alternative implants and techniques such as a biconvex all-polyethylene patella component, porous metal component, patellar bone grafting, or leaving the residual bone unre-

Figure 16.4—A) Preoperative lateral x-ray in a patient with prior tibial plateau fracture internal fixation. The patellar height above the joint line appears normal; B) following TKA, the lateral x-ray demonstrates a patella infera or baja location relative to the joint line. There is heterotopic ossification within the quadriceps seen proximal to the patella.

surfaced may be considered. The clinical results of patellectomy have been suboptimal, and this is rarely recommended.

ISOLATED REVISION OF A FAILED PATELLAR COMPONENT: ONLAY ALL-POLYETHYLENE IMPLANT

For a patient with a loose patellar component, the surgeon should carefully examine the mode of failure as well as the implant design and component alignment, as these factors may contribute to the patellar component failure. Isolated patellar revision, (with or without concurrent lateral retinacular release) should be performed only after investigating for maltracking and component malrotation. In a patient with isolated failure (loosening, wear, maltracking, pain) of the TKA patellar component, the etiology of the failure should be investigated. The results of isolated revision of the patella have been suboptimal, primarily due to preexisting component malrotation of the femoral and tibial implants.[3, 4] In our practice, most TKA revisions of patella components are revisions of all-polyethylene implants with cemented fixation. Revision of the patella may be performed using thicker onlay patellar components, incorporating a three-peg (or a single-peg) cemented design. Onlay revision components are our preferred choice when a sufficient amount of host bone remains for peg fixation. Similar to primary TKA, the patella implant in revision should be medialized and placed superiorly, when possible, to optimize patella tracking. However, host bone stock and defects may dictate placement of the revision implant. If there is patella remodeling or lateral facet hypertrophy, a lateral facetectomy may be performed to minimize uncovered lateral patella bone and reduce pain from impingement of this uncovered bone (Figure 16.6). A 3-peg cemented design has not demonstrated superior fixation compared to a single peg design in primary TKA patella fixation,[5] however this peg design difference has not been studied in the revision patella setting. Ide-

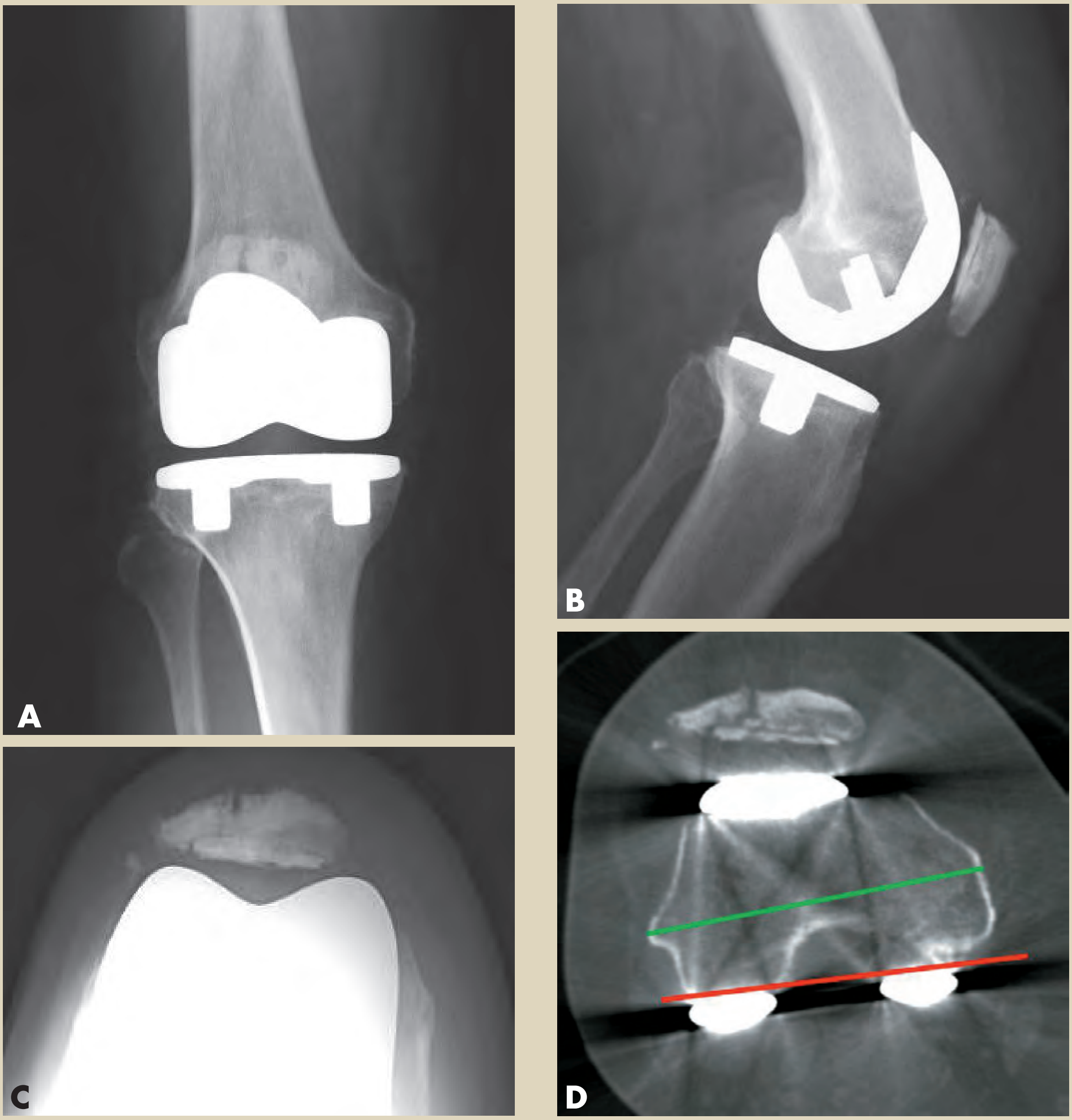


Figure 16.5—Preoperative imaging in a patient with anterior knee pain 3-years following TKA. A-B-C: X-rays demonstrate increased sclerosis and a radiolucency in the patella suspicious for a patella fracture. D: CT scan confirms a periprosthetic patella fracture and a radiolucency at the implant-cement interface. The fracture has propagated in the region of one of the pegs of the patellar component. The femoral component is internally rotated (red line) in relation to the transepicondylar axis (green line).

ally we prefer a flat patella residual bone surface with >10 mm of bone remaining to use an onlay implant for patella revision. If a concavity exists in the patella host bone (secondary to osteolytic defects, patella loosening and bone loss, or bone loss during implant removal), then a biconvex patella revision implant should be considered. Revision of the patella with an all-polyethylene component has demonstrated acceptable results with a high success rate and a low complication rate.[6-8] If there is sufficient bone stock (10 mm or more in thickness) after removal of metal-backed patellar components, most authors recommend revision of metal-backed components to cemented all-polyethylene onlay-type components at the time of the procedure. However, if the met-

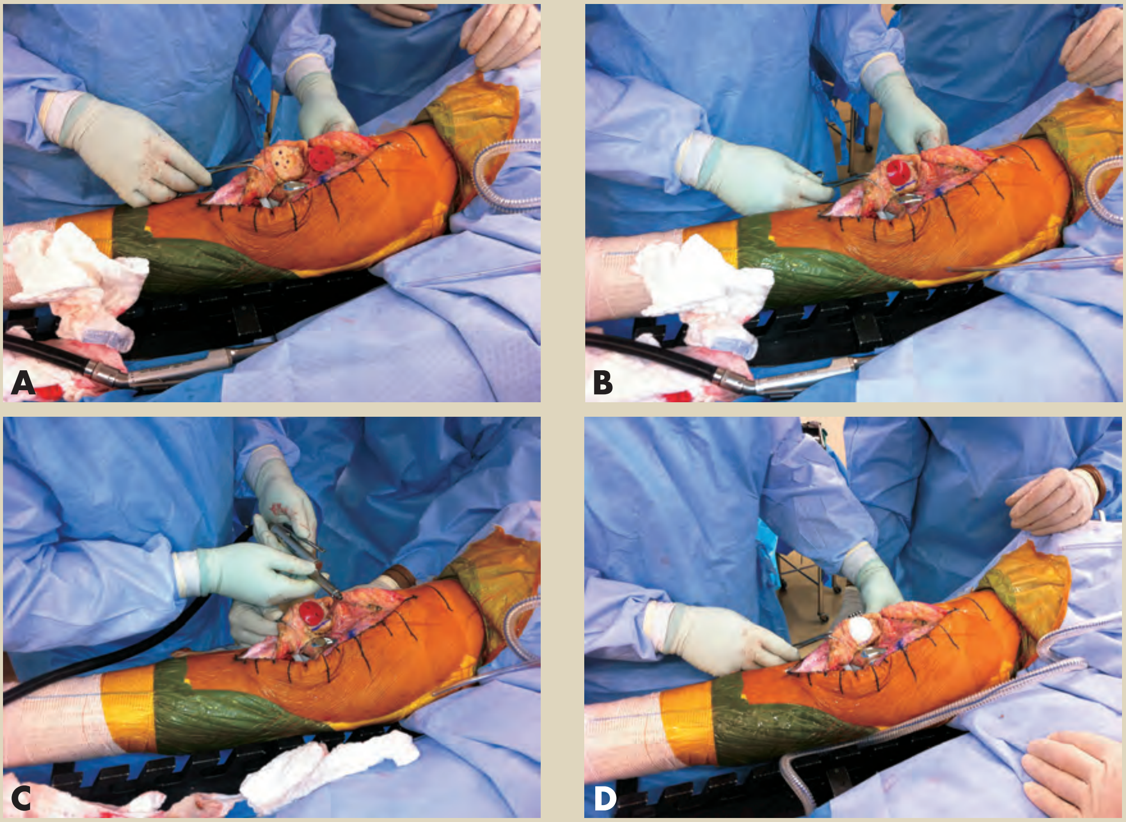


Figure 16.6—The patient in Figure 1 underwent an isolated patella revision. A) Implant removal and preparation for new onlay patellar component; B) trial patella with demonstration of residual lateral patellar facet hypertrophy; C) resection of uncovered lateral facet with a small saw blade; D) Final patella revision implant and lateral facetectomy.

al-backed component is well-fixed and the bone stock is less than 10 mm in thickness *and* without significant polyethylene wear, retaining these components is recommended.[6-8]

RETAINING A WELL-FIXED PATELLAR COMPONENT

The advantages of retaining a well-fixed patellar component are intuitive. There is no need to remove a well-fixed patella component provided the polyethylene is in satisfactory condition and the implant has a favorable track record (*i.e.* not gamma radiated in air). Preservation of remaining bone stock of the patella, elimination of the risk of patellar fracture during patella component removal (and later fracture, fragmentation, or osteonecrosis secondary to revision), and elimination of additional component expense are factors worth considering. In order to retain the well-fixed patellar component, there must be no evidence of loosening, minimal osteolysis, and no significant polyethylene wear. The component should track within the femoral trochlea, and should not be over or under-stuffed in composite thickness. Retaining a well-fixed patellar component in revision TKA (Figure 16.7) has demonstrated favorable results.[9, 10] When there is a deficiency in patella bone stock and a potential fracture with component removal, retaining a well-fixed patellar component is a viable option.[9, 10] Similarly, combining a revision femoral component from one implant manufacturer with a retained older design well-fixed all polyethylene patella from a different implant company has been reported with favorable results.[11] Thus, the surgeon does not have to revise the patella just to 'match' the patella component to the femoral revision design.

Figure 16.7—A-B) Preoperative radiographs of a patient with a TKA with a periprosthetic tibia fracture and extensive osteolysis in the proximal tibia. The patellar component remained well-fixed; C) postoperative x-rays following revision of femur and tibia with retention of the well-fixed all-polyethylene patellar component. The implant demonstrated no wear and had been sterilized in a gamma radiation in vacuum preparation, with a favorable track record.

REMOVAL OF THE WELL-FIXED PATELLAR COMPONENT

Removal of cemented well-fixed all-polyethylene patellar components begins with sawing at the implant-bone interface, separating and removing the polyethylene from the pegs. The pegs then can be removed from the cement with a sharp drill bit by drilling at the center of the cemented peg. Caution should be taken in preventing the perforation of the anterior cortex. Then, the remaining cement can be removed with osteotomes or a saw, and caution should be taken in the prevention of bone fragmentation. Lastly, using a drill or high-speed burr with a fine tip, the surgeon can drill out the pegs and cement in the peg-hole.[12]

The removal of cementless well-fixed metal-

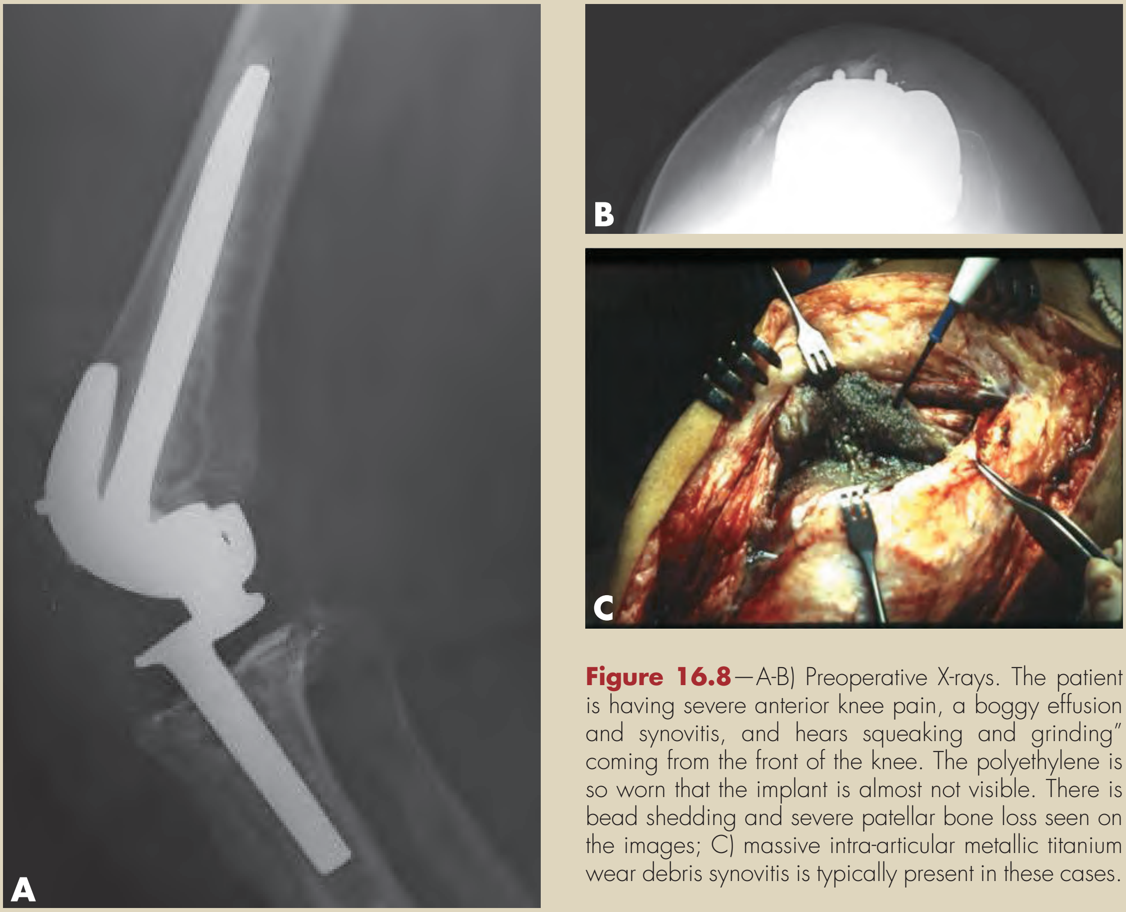


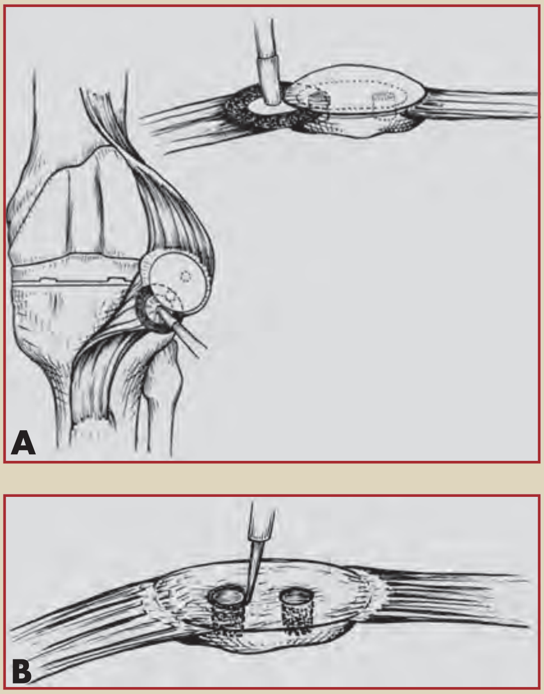
Figure 16.8—A-B) Preoperative X-rays. The patient is having severe anterior knee pain, a boggy effusion and synovitis, and hears squeaking and grinding" coming from the front of the knee. The polyethylene is so worn that the implant is almost not visible. There is bead shedding and severe patellar bone loss seen on the images; C) massive intra-articular metallic titanium wear debris synovitis is typically present in these cases.

backed patellar components tends to be very challenging, and frequently is associated with patella bone loss and requires specialized instrumentation and technique.[13]

Frequently the wear and bone loss may be so severe that the patellar component is recessed into the trochlear groove and may not be clearly visualized on X-rays (Figure 16.8).

Technique of removal

The patella is everted and peripatellar soft tissue is debrided to expose the bone-implant interface. The patella is held with two bone tenaculae for firm control during use of the saw and burr. The peripatellar and knee tissues are covered with moist sponges to collect metallic debris. The surgeon should start with the removal of the polyethylene from the metal, passing a thin saw blade beneath the polyethylene. A diamond edge circular saw blade (Anspach Inc, Lake Park, FL) wheel-cutting tool should be used to cut through to the anchoring pegs at the peg-plate junction (Figure 16.9), and continuing around the periphery, allowing the metal baseplate to be removed.[12] Alternatively, a saw blade may be used to enter the bone-implant interface, although this is frequently not sharp enough to cut the metal pegs and creates a large amount of metallic debris (Figure 16.10). The three pegs then remain well-fixed within the host bone. A small trephine from a broken screw-removal set is passed by hand over the peg to remove it. Alternatively, a pencil tip burr is passed around each peg and the peg is removed. Avoiding 'prying the pegs out' should be noted, as this may lead to fracture of the patella or excessive bone loss with the peg removal. During the use of the high-speed wheel and bur, continuous irrigation is used to prevent thermal necrosis of bone. Following completion of patellar component removal, the debris col-



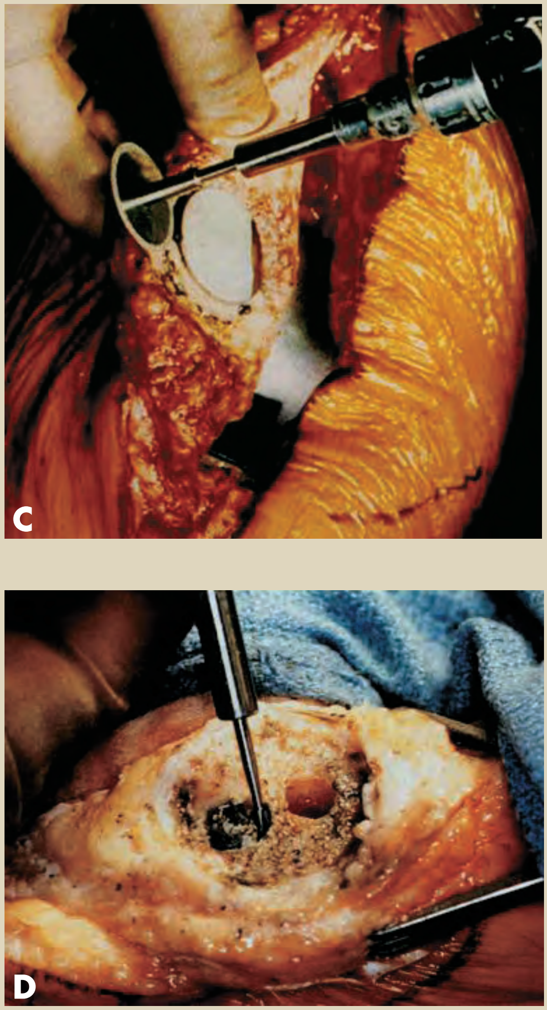


Figure 16.9—Schematic of technique of removal of a metal-backed patellar component. A) A diamond edge circular saw blade is used to cut through the pegs at the periphery; B) a fine point pencil-tip burr is used to burr around the pegs which remain in the bone; C-D) intraoperative photos demonstrating the removal technique (Images courtesy of Dr Doug Dennis reproduced with permission).

lecting sponges are removed, and the patella and wound thoroughly irrigated with pulsatile lavage. Alternatively, the metal base plate may be sectioned into quarters with the metal cutting disc-wheel first.

In elderly or low demand patients, even with burnishing of the femoral component secondary to contact from a metal-backed patella there is evidence for: 1) the grooved femoral component not being replaced; 2) the failed patellar component replaced by an all-polyethylene patella; 3) total synovectomy for metallic wear-debris synovitis; 4) modular tibial polyethylene liner exchange; 5) realignment of patellar tracking by lateral release and medial imbrication of the quadriceps mechanism. This algorithm retains a well-fixed femoral component and has been beneficial for elderly patients or lower demand patients.[14]

Figure 16.10—Opening up the bone-implant interface may be initiated with a thin saw blade. However, this is usually unsuccessful in cutting through the pegs and generates a large amount of debris.

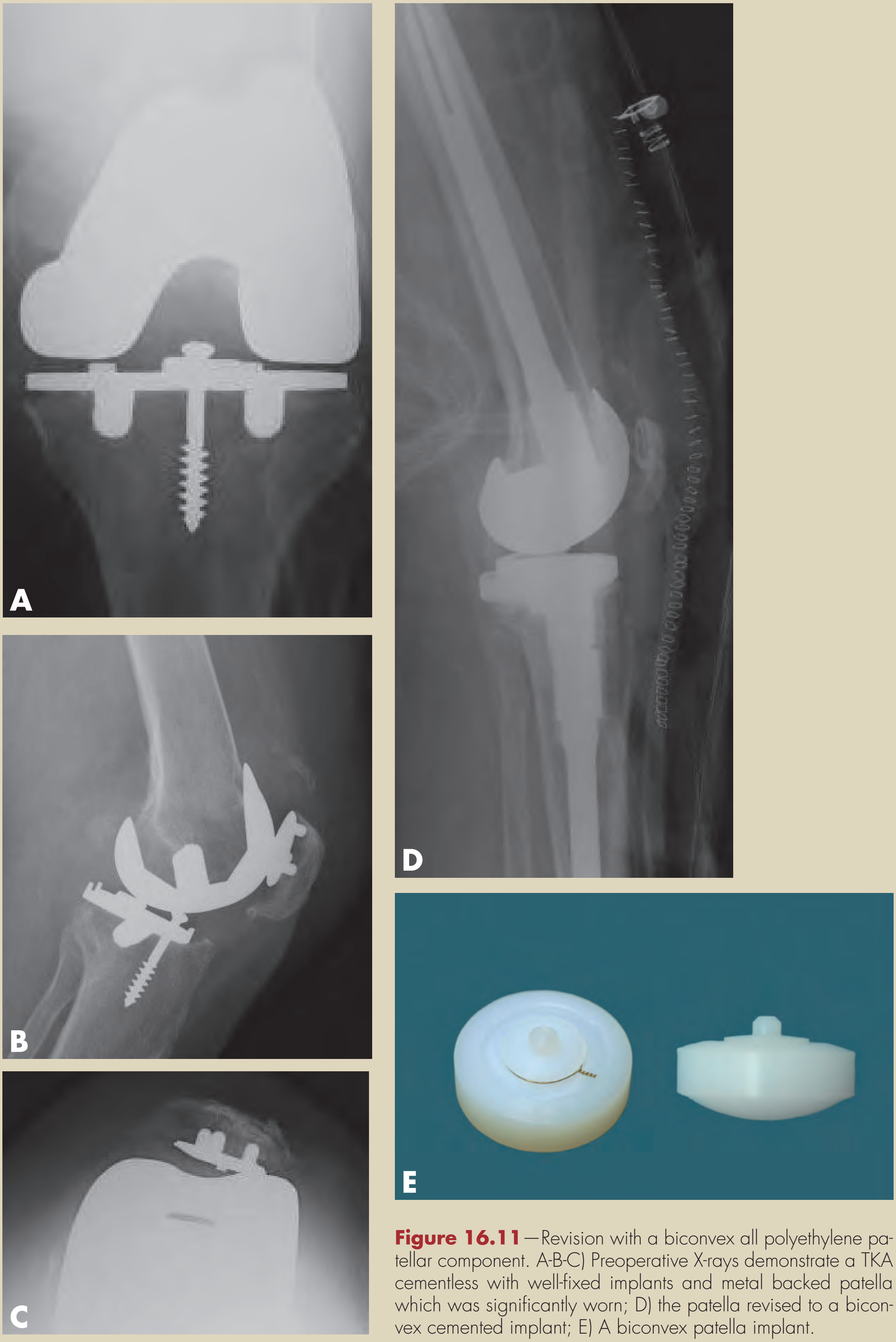
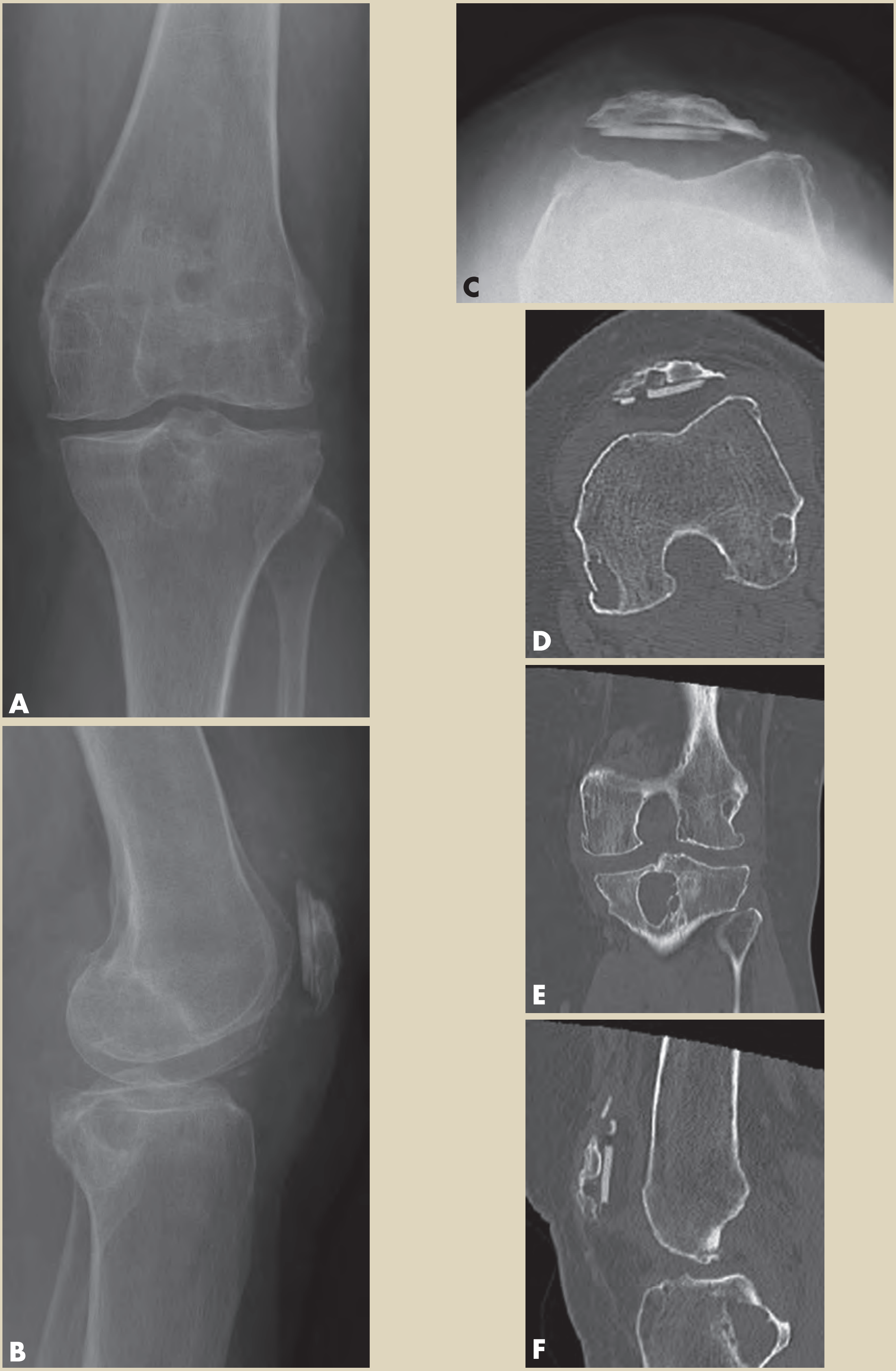


Figure 16.11—Revision with a biconvex all polyethylene patellar component. A-B-C) Preoperative X-rays demonstrate a TKA cementless with well-fixed implants and metal backed patella which was significantly worn; D) the patella revised to a biconvex cemented implant; E) A biconvex patella implant.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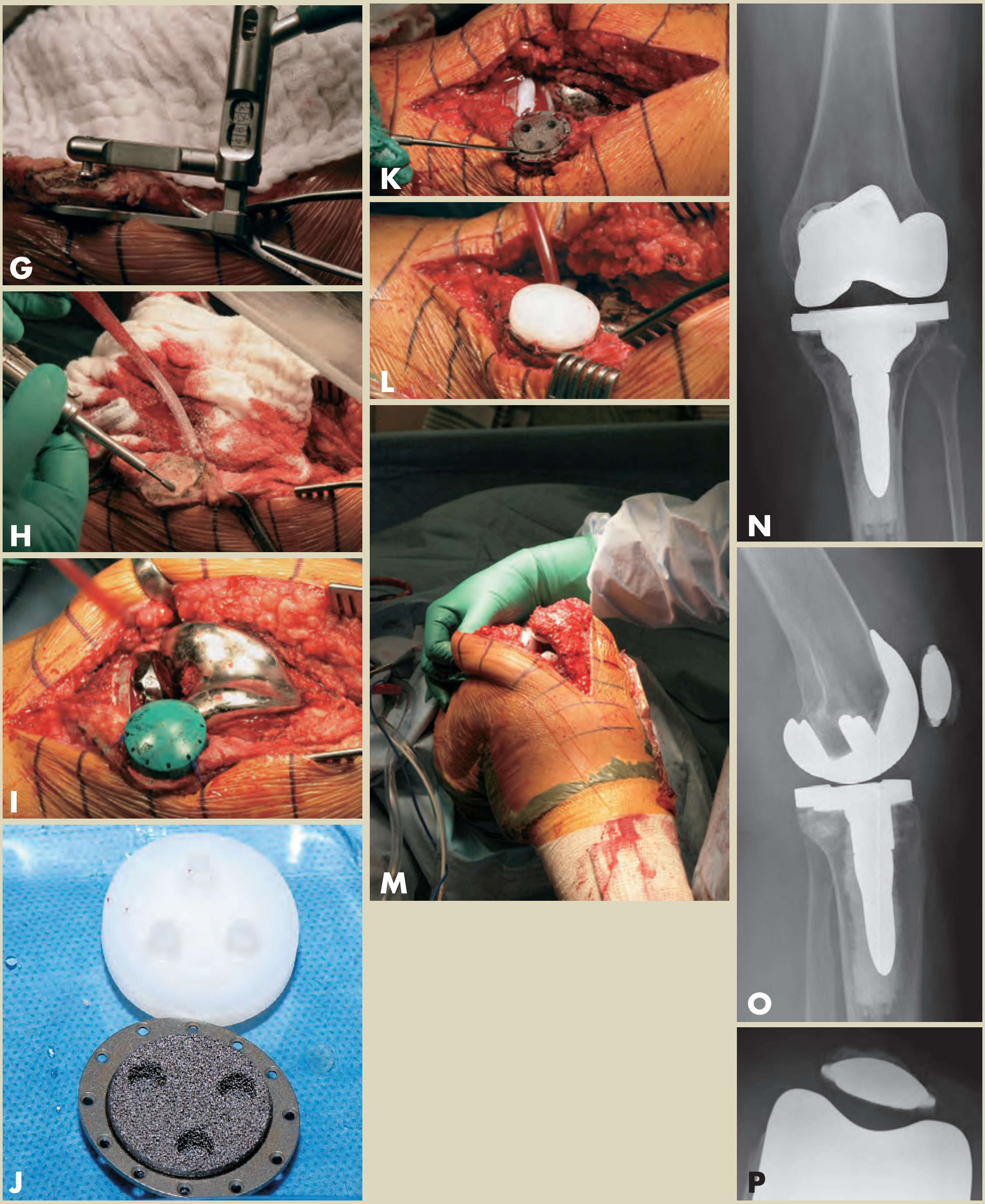

Figure 16.12—Revision using a porous metal cementless patellar component. This patient 20 years previously underwent an isolated patella resurfacing (without a trochlear implant) for chronic patellofemoral pain and presented with anterior knee pain and effusions. A-B-C) preoperative X-rays demonstrating osteolysis and patella bone loss; D-E-F) CT scan demonstrates extensive cavitary osteolysis of the femoral epicondyles, tibial PCL attachment, and of the patella; G) measurement of residual patella thickness; H) preparation of the bone bed with a burr; I) trial implant is sutured in place loosely; J) porous metal patellar implant (Trabecular Metal Augmentation Patella [Zimmer, Warsaw, IN]); K) The implant is sutured in with 2-0 fiberwire nonabsorbable suture; L) the all-polyethylene 3-peg patella is cemented onto the porous metal baseplate with the lugs cemented into the three holes in the baseplate; M) final intraoperative tracking of the patella and extensor mechanism. N-O-P) 5-year follow-up X-rays. The patient is asymptomatic.

BICONVEX PATELLAR INLAY COMPONENT

Implantation of an onlay revision patellar component requires an adequate amount of bone support for fixation – typically in the range of 10 mm of thickness,[15] which is often but not always present. If the patella has a thickness less than 10 mm but the central cavity is sufficient, then an all-polyethylene biconvex patellar component may provide improved host bone coverage and fixation over a standard 3-peg component.[15, 16] Typically this scenario is seen in cases where there has been either previous use of an inlay type component at the primary TKA, or the patella implant has loosened, creating a central cavitary defect with intact bone around the periphery (Figure 16.11). A biconvex component is possible with as little as 5 mm of central cavity as long as there is support of the implant around the periphery, restoring the composite thickness of the patella.[17, 18] The bone preparation for this implant includes biconvex reamers which further contour the host bone to accept the biconvex implant, limiting the depth of reaming to prevent loss of patella thickness. A small central peg is incorporated in the design, and these implants come in "primary" thickness/sizes (*i.e.* inlay components for primary TKA) and "revision" biconvex sizes/thicknesses for more significant depth bone defects. The biconvex patellar component requires an adequate amount of cancellous bone for the interdigitation of cement.

POROUS METAL (TRABECULAR METAL™) CEMENTLESS PATELLAR COMPONENTS

When addressing the deficient patella that cannot support an onlay or biconvex inlay cemented patellar components, a porous metal (Trabecular Metal [Zimmer, Warsaw IN]) patellar component is an option for more significant bone defects (Figure 16.12). The porous metal component is an implant with bone ingrowth potential. This implant has a convex porous metal outer surface and is sewn into the residual patella bone, creating a platform for cementing a 3-peg onlay patellar component. If sufficient bone remains, the residual host bone may be prepared with convex reamers to contour the residual host bone. We prefer to use a high speed burr to prepare the host bone, as often the patellar bone is severely deficient and the use of a reamer may ream away too much bone. The remaining host bone is freshened with the burr to stimulate bone bleeding and to contour the host bone as required. The periphery of the implant has holes where nonabsorbable suture is used to secure the implant to surrounding host bone and soft-tissue of the retinaculum. A 1 mm drill bit may be used to drill through these holes if they lie in regions of sclerotic host patellar bone, thus facilitating suture passage through this sclerotic bone. Multiple sutures are required to provide initial rigid and stable fixation. Successful results with this implant have been reported;[19-21] however, it is mandatory that a shell of residual host bone is preserved at a minimum, in order to achieve bone ingrowth. Thus, the use of these implants is contraindicated in postpatellectomy knees, or in revision TKA with no residual host bone, as the implant will not achieve soft-tissue ingrowth and will loosen and erode through the extensor mechanism into the anterior subcutaneous tissues of the knee.

PATELLAPLASTY (IMPLANT REMOVAL AND RETENTION OF HOST PATELLAR BONE SHELL)

Patellaplasty (also known as patellar resection arthroplasty and patellar component resection) is defined as a removal of the patellar component with retention of the deficient patellar bone and without reimplantation of a new patellar component due to severe patellar deficiency. Unfortunately not every patella is suitable for revision, and on occasion the surgeon needs to recognize that in cases of severe patellar bone loss, further attempts at reconstruction may not only be unsuccessful, but may compromise the extensor mechanism. The results of patellaplasty have been compared to revision of the patella [22] in revision TKA. Compared to revision of the patella, patients with patellaplasty have demonstrated increased pain and decreased function. However, the patients that received a patellaplasty had more severe patella defects not suitable for reconstruction, and this study was performed before the introduction of porous metal patella revision implants. Other studies have reported acceptable results with patellaplasty, without the risks of further extensor mechanism interventions. If a significant patellar defect is identified preoperatively, patients should be informed that a patellaplasty may be required if other reconstructive options are not possible, and that residual postoperative anterior knee pain may persist and will not require further patellar intervention provided the extensor mechanism function remains intact. Thus, resection of the patellar component, without reimplantation, is an acceptable alternative in revision TKA in patellas lacking adequate remaining bone stock.

MANAGEMENT OF THE NON-RESURFACED PATELLA IN REVISION TKA: RESURFACING OR NOT?

Resurfacing *versus* nonresurfacing of the patella in primary TKA continues to be controversial. However, the patient undergoing revision TKA with a nonresurfaced patella is a special circumstance. The decision of how to manage the patella in this situation is also controversial. The patient is either undergoing revision for a non-patella related reason (*i.e.* polyethylene wear, tibial or femoral component loosening, malrotation of implants and extensor maltracking, global knee pain, instability) or for anterior knee pain which is presumed to be related to the non-resurfacing of the patella. If the reason for revision is *not* for a patellofemoral-related problem, then we will leave the patella unresurfaced at the time of revision TKA. However, if the reason for revision is for isolated anterior knee pain presumed to be related to nonresurfacing of the patella, then we revise the patella to resurfacing. It should be noted that if there is evidence of patella maltracking prior to revision, resurfacing the patella will not necessarily improve tracking. In this instance it is imperative for the surgeon to obtain a CT scan of the femoral and tibial components and assess for component internal malrotation. If malrotation is present, the surgeon will need to address this at the time of revision surgery, and must understand that isolated revision of the patella in this scenario will not improve tracking. Two of us (RSB, RLB) have reported the long-term results of patella resurfacing vs. nonresurfacing at 10 years in randomized clinical trials.[23, 24] In both of these unrelated studies, revision of a nonresurfaced patella to a resurfacing was only 50% successful in relieving preoperative anterior knee pain. Thus, we counsel patients undergoing this procedure that the results are not predictable, and revision to patella resurfacing for anterior knee pain is not a guarantee for improvement. Recently, Daniilidis *et al.* reported on knees that underwent a second-stage, patellar-resurfacing procedure due to persistent anterior knee pain at a mean follow-up of 61.8 months, 27% of patients continued to experience anterior knee pain and to be dissatisfied.[25]

BONE GRAFTING

Hanssen *et al.*[26] have described a unique bone grafting technique for patients undergoing revision TKA to address significant deficiency in host patellar bone. The restoration of patellar bone stock involves the impaction of cancellous bone (autograft from femoral or tibial preparation, or allograft cancellous bone) graft into the patellar defect, which then is covered by mobilizing a tissue flap of synovium from the suprapatellar pouch region that is sutured over the bonegraft around the rim of the patella, essentially creating a pocket for bonegraft that is sealed closed. We have rarely performed this technique, and instead prefer to use a porous metal implant when possible, or a patellaplasty. Possible indications for this technique may be in a younger patient with significant bone loss in an attempt to recreate more normal patella biomechanics, and in a patient with osteonecrosis of the patella that has a loose patellar implant that is not planning to be revised to another resurfacing (Figure 16.13). Two technical notes about this procedure that we have learned: the first is that if there is not a tight seal in the pouch, the bonegraft may escape into the joint and surrounding tissues, creating the appearance of heterotopic ossification in an around the patella and extensor mechanism. Secondly, caution in developing the flap of soft tissue in order to not compromise the quadriceps tendon and its insertion into the superior pole of the patella. The authors have reported this technique appears to be an acceptable option in treating the deficient patella through restoration of patellar bone stock, improvement in patellar articulation, and improvement in the quadriceps knee function.[26]

If a patellectomy has been previously performed, then TKA may be performed without any extensor mechanism intervention, either with a CR or PS knee. Autograft bonegraft procedures have historically been reported [27, 28] to restore patellar bone, however these are unnecessary, as the results of TKA in patients with a prior patellectomy are favorable without these additional procedures and morbidity, and we do not recommend these procedures.

POSTOPERATIVE MANAGEMENT: TKA PATELLA REVISION

Physical therapy may begin as early as the day of or the day following surgery, allowing weight-bearing as tolerated. There should be clear com-

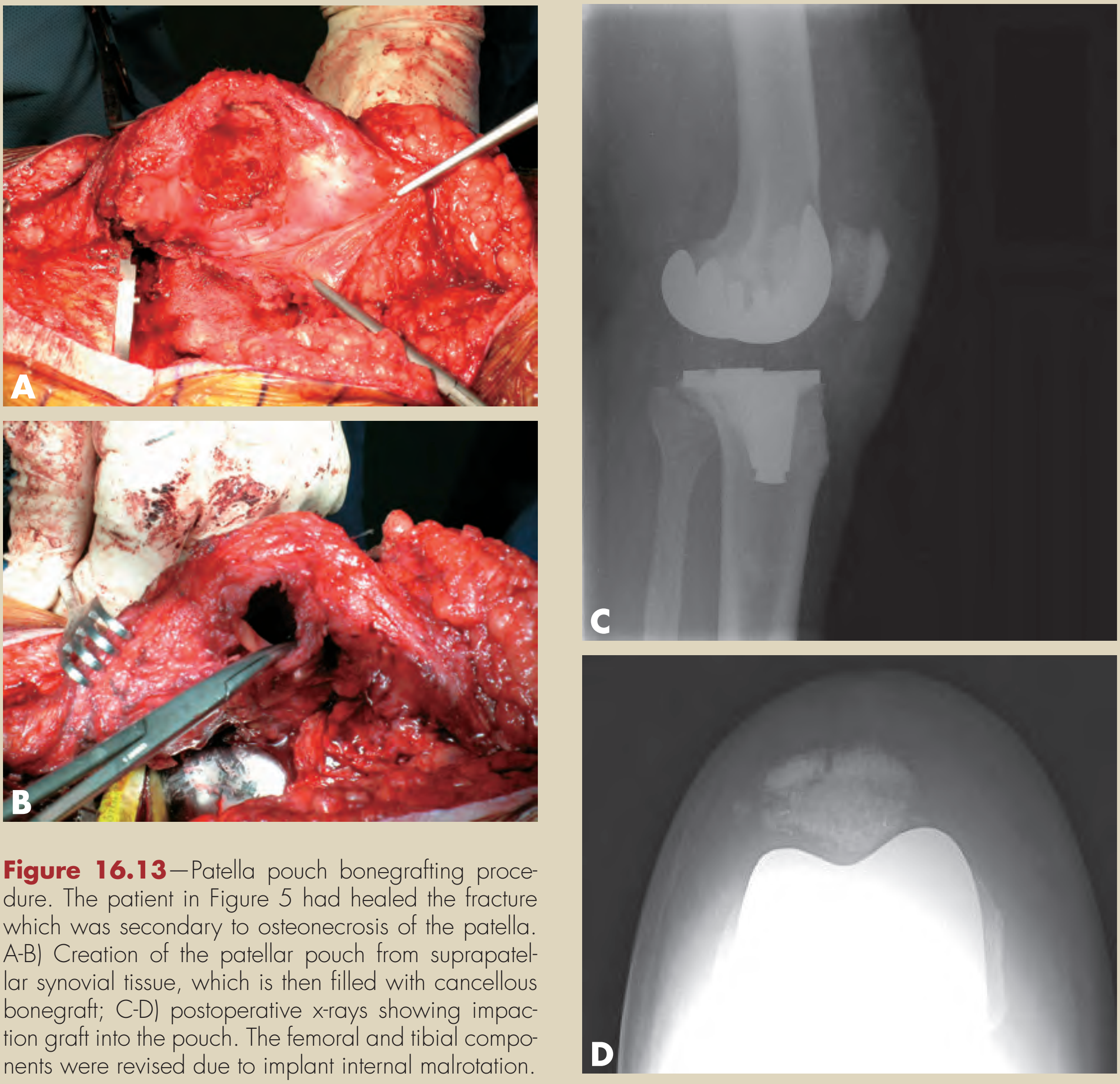

Figure 16.13—Patella pouch bonegrafting procedure. The patient in Figure 5 had healed the fracture which was secondary to osteonecrosis of the patella. A-B) Creation of the patellar pouch from suprapatellar synovial tissue, which is then filled with cancellous bonegraft; C-D) postoperative x-rays showing impaction graft into the pouch. The femoral and tibial components were revised due to implant internal malrotation.

munication between the patient, nurses, and physical therapists with regards to the postoperative therapy plan, allowing for optimal recovery of the patient following revision TKA, specifically regarding the treatment of the extensor mechanism. For the majority of patients that undergo a cemented patella revision or patellaplasty, no specific restrictions apply to the knee. However, if a cementless porous metal implant is utilized for the patella revision, or if there is fixation for a periprosthetic patella fracture, the surgeon should communicate clearly the amount of flexion and type of quadriceps exercises permitted, and whether bracing is needed to limit higher flexion. Often we will not allow high flexion after this reconstruction to limit the force on the patellar implant during the ingrowth period. Generally, we minimize restrictions and bracing which are not usually needed unless the two conditions above are present. Lastly, postoperative in-hospital radiographs that include both AP and lateral views should be obtained after surgery, and an axial view radiograph should be performed at 6 weeks postoperatively.

COMPLICATIONS

There are a number of postoperative patellar complications following revision TKA, outlined in Table 16-I.

TABLE 6-I—Postoperative patellar complications following revision TKA.

- Patellar maltracking - lateral subluxation and tilt
- Anterior knee pain
- Patellar fracture
- Patellar fragmentation
- Recurrent patellar instability: tilt, subluxation, dislocation
- Osteonecrosis
- Patellar component malposition
- Patellar component loosening
- Patellar component polyethylene wear
- Patellar component failure (loosening, fracture of implant)
- Osteolysis
- Infection
- Extensor lag
- Hematoma

CONCLUSIONS

Patellar management in revision TKA is an important aspect of the revision surgical procedure. The surgeon should preoperatively consider implant stability and type/design of existing implant, patellar host bone stock and degree of osteolysis, tibial/femoral component rotation, and available revision implants and resources before undertaking the revision. We have developed a decision making algorithm to assist the surgeon in management of the patella in revision TKA (Figure 16.14). The surgeon performing revision TKA needs to be familiar with all of the potential treatment options to manage the patella. Careful preoperative planning including having several options available for patella revision will allow the surgeon to manage all patellar defects and problems at the time of revision TKA.

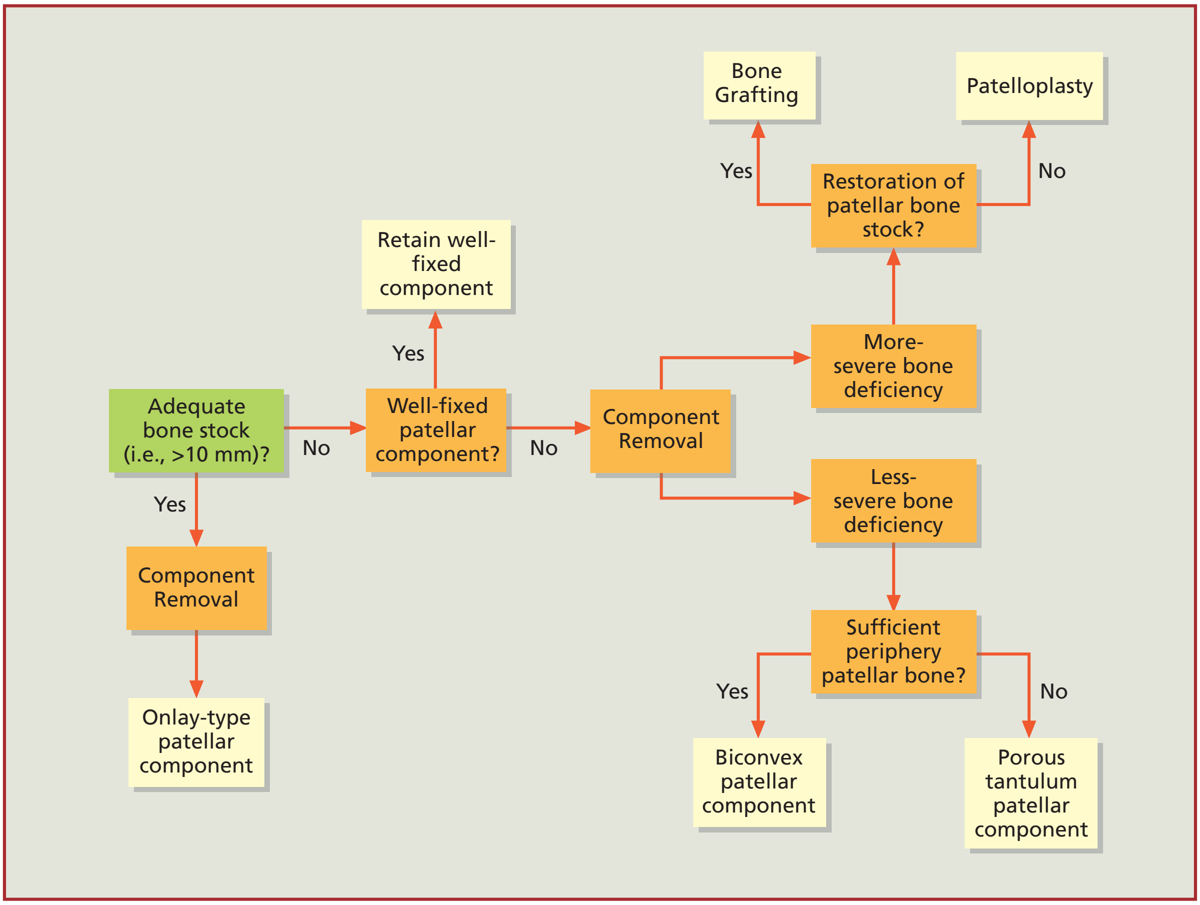

Figure 16.14—Decision making algorithm for management of the patella in revision TKA.

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Recommended readings

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