COVERAGE:

Meniscal allograft transplantation is considered experimental or investigational.

DESCRIPTION:

Historically, the role of normal meniscal cartilage was greatly underappreciated and up until some 30 years ago, torn and damaged menisci were routinely excised. However, it is now known that the menisci are an integral structural component of the human knee, functioning to absorb shocks, provide joint stability, congruity, and nutrition. In addition, total and partial meniscectomy are associated with altered load bearing across the joint, frequently resulting in degenerative osteoarthritis. The integrity of the menisci are particularly important in knees in which the anterior cruciate ligament (ACL) has been damaged; in these situations, the menisci act as secondary stabilizers of anteroposterior and varus-valgus translation. With this greater understanding, the surgical principles of treating torn or damaged menisci evolved to their repair and preservation whenever possible. Moreover, meniscal allograft transplantation has been investigated in patients with a previous meniscectomy or requiring total or near total meniscectomy for irreparable tears. There are 3 general groups of patients who have been treated with meniscal allograft transplantation:

- those with pain and discomfort associated with early osteoarthrosis
- those who are undergoing ACL reconstruction in whom a concomitant meniscal transplant is intended to provide increased stability
- athletes with few symptoms in whom the allograft transplantation is intended to deter the development of osteoarthritis.

The following different types of allografts have been investigated:

**Fresh**
Fresh implants, harvested under sterile conditions, typically are not a practical option. The grafts must be used within a couple of days to maintain viability. Also, there are concerns regarding infectious diseases, such as HIV, and the grafts must be appropriately sized.

**Frozen**
After sterile harvest, the meniscus can be frozen for storage until thawed for use. The freezing process may destroy donor cells and decrease the size of the graft.

**Freeze Dried (Lyophilized)**
In addition to freezing, the tissue may be dehydrated, permitting storage at room temperature. Before transplantation, the graft is thawed and rehydrated.

**Cryopreserved**

Cryopreservation freezes the graft in glycerol, preserving the cell membrane integrity and donor fibrochondrocyte viability.

Of all the above options, cryopreserved grafts are most commonly used; Cryolife (Marietta, GA) is a commercial supplier of such grafts.

The risk of infectious disease, particularly HIV or hepatitis, continues to be a concern. Several secondary sterilization techniques have been used, with gamma irradiation the most common.

**RATIONALE:**

Intermediate outcomes regarding meniscal allograft transplantation primarily focus on the viability of the transplanted tissue. Long-term outcomes vary with the patient population studied. For example, relief of pain and improved function are critical outcomes for symptomatic patients with signs and symptoms of osteoarthritis. When performed in conjunction with repair of the anterior cruciate ligament, improved function and maintenance of knee stability is pertinent. In both of the above situations, it is important to isolate the contribution of the meniscal allograft to the overall surgical procedure. Finally, for asymptomatic patients who are undergoing allograft transplantation prophylactically, long-term outcomes regarding the incidence of subsequent osteoarthritis is important.

Data regarding meniscal allograft transplantation are of poor quality. For example, none of the studies reporting health outcomes included preoperative and postoperative measures of restoration of knee function, including MRI results or second-look arthroscopy. None of the studies presented clear comparisons of preoperative clinical findings to postoperative results. Each study assessed outcomes differently. While definitive data was not available, in general, poor results were reported in patients with Outerbridge grade III or IV osteoarthritis, or in those with unstable knees, and thus researchers have largely abandoned meniscal allograft transplantation in these patients.

The literature published since 1997 does not address the limitations identified in the TEC Assessment. In terms of the intermediate outcome of graft viability, the largest case series has been collected by CryoLife, a commercial supplier of cryopreserved allografts. However, these data are not available in the published peer-reviewed literature. As summarized by Johnson in a 1999 report, among 1,023
transplants CryoLife reported graft survival of 93% when the meniscus is transplanted with a bone plug for fixation, compared to 67% without such fixation. The method of determining graft viability, with either serial MRI scans or second-look arthroscopy, is not reported. Additional patient outcome information is posted on their company Web site, based on responses to patient questionnaires. A total of 332 patients were contacted; 136 (41%) responded. The mean patient age was 35 years old, and in 84% of cases transplantation was related to prior sports or traumatic injury. A total of 80% of patients rated their knee function as normal to nearly normal as compared to their knee function before surgery. The incomplete nature of the data and the heterogeneous population of patients, many of whom presumably underwent concomitant knee reconstructive procedures, make this data scientifically uninterpretable.

PRICING:
None

REFERENCES:


Blue Cross and Blue Shield of Texas, a Division of Health Care Service Corporation, a Mutual Legal Reserve Company* Southwest Texas HMO, Inc.* d/b/a HMO Blue® Texas
* Independent Licensees of the Blue Cross and Blue Shield Association
MENISCAL ALLOGRAFT TRANSPLANTATION
SUR703.011
POSTED DATE: 8/22/2003
EFFECTIVE DATE: 12/1/2003

• CryoLife website: www.cryolife.com

DISCLAIMER:

State and federal law, as well as contract language, including definitions and specific inclusions/exclusions, takes precedence over Medical Policy and must be considered first in determining coverage. The member’s contract benefits in effect on the date that services are rendered must be used. Any benefits are subject to the payment of premiums for the date on which services are rendered. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically. HMO Blue Texas physicians who are contracted/affiliated with a capitated IPA/medical group must contact the IPA/medical group for information regarding HMO claims/reimbursement information and other general polices and procedures.