Meniscal Tears
By Jim Hsu, MD

Anatomy and Function
The meniscus is a C-shaped knee cartilage that fits in the space along the edge of the joint. It redistributes and dissipates the physical stress of basic daily actions and exercise to minimize joint surface wear over time.

Development of a Meniscal Tear
Acute traumatic knee injury can result in a large meniscal tear. The meniscus can also sustain damage over time: a small surface blemish can become a larger, symptomatic tear due to the limited blood supply penetrating only in the peripheral 10-30 percent of meniscus tissue.

Symptoms
When a meniscal tear progresses so that a flap, a layer, or the entire meniscus become unstable, the patient can experience mechanical symptoms such as pinching, clicking, shifting sensations, intermittent sharp stabbing pain, or acute blockage of normal knee movement, depending on the position of the unstable component.

Physical Exam
Physical exam may demonstrate effusion, limited motion, clicking, or joint line tenderness. However, if the torn portion of meniscus is back in place at the time, the exam can also fail to show abnormalities. If the symptoms described by the patient raise sufficient suspicion of a meniscal tear, further workup is warranted.

Imaging Studies
A weight-bearing knee x-ray series assesses the true joint space and therefore can quickly, easily, and cost-effectively identify moderate to severe degenerative joint disease, along with other conditions such as loose bodies. MRI is the most effective advanced imaging study to directly identify a meniscal tear. If initial assessment with x-rays are negative for conditions such as degenerative joint disease, MRI should be considered as the next workup step.

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The patient is allowed to weight bear as tolerated and to move the knee immediately post surgery. With limited meniscus blood supply, patient age, and other clinical factors, most tears are best treated with partial meniscectomy.

For select tear patterns amenable to healing, meniscus repair can preserve meniscal tissue, restore meniscal function, protect joint condition, and relieve pain. Many factors important to a successful repair, such as tear location, orientation, and tissue condition must be accurately assessed intra-operatively. Therefore, if repair is considered, the “repair versus meniscectomy” decision is thoroughly discussed with the patient pre-operatively, but the final decision is made intra-operatively. Meniscal repair requires a more complex postoperative course, with weight-bearing restrictions, limited movement and activities over months. Also, there is a small but definite risk of re-tear with repair that can necessitate re-operation. Therefore, a meniscal repair is considered only if demographic factors, patient compliance, and tear characteristics combine to indicate a realistic chance for a successful outcome.

Summary

The limited blood supply and healing potential of the meniscus contribute to gradual tear progression. Concurrent issues such as degenerative joint disease are important factors in treatment determination. Conservative treatment can be effective in relieving symptoms of a meniscal tear, but the tear may progress in size and symptom recurrence is possible. Partial meniscectomy is the more commonly appropriate surgical treatment, but meniscal repair in the suitable patient and tear configuration can offer benefit of meniscus preservation and future joint protection, and there are broadening indications to more proactively repair substantial tears for improved long-term clinical outcome.

Advances in Glaucoma Treatment

By Shivali Menda, MD

Glaucoma is an optic neuropathy characterized by death of the retinal nerve fiber that is usually associated with elevated intraocular pressures (IOP) and peripheral vision loss early in the disease course. In general, patients are treated with medical or laser therapy first while reserving surgical treatment for those with uncontrolled disease or progression despite maximal medical treatment. Excitingly, two new glaucoma medications with novel mechanisms have become available within the last year. The last was the introduction of prostaglandin analogues in the 1990’s which lower intraocular pressure by increasing aqueous outflow. Latanoprostene bunod ophthalmic 0.024 percent (Vyzulta, Bausch + Lomb) and netarsudil ophthalmic solution 0.02 percent (Rhopressa, Aerie Pharmaceuticals) are two new medications that lower intraocular pressure by new mechanisms.

Vyzulta

Vyzulta is a once-daily medication which was approved by the FDA for patients with ocular hypertension and open-angle glaucoma. It is metabolized into its two components: latanoprost acid and butanediol mononitrate. Latanoprost acid increases uveoscleral outflow while butanediol mononitrate is metabolized into nitric oxide (NO) which increases outflow at the trabecular meshwork and Schlemm canal. Studies have shown a mean IOP reduction of approximately 25 percent from baseline. Side effects were similar to other prostaglandin analogues.

Rhopressa

Rhopressa is a once-daily medication that is a Rho kinase (ROCK) inhibitor. It lowers intraocular pressure via three different mechanisms: increasing flow through the trabecular meshwork, decreasing aqueous production, and decreasing episcleral venous pressure. The clinical trials which compared Rhopressa with earlier generation medications showed noninferiority to timolol, a topical beta-blocker, and IOP reductions ranged from 3.9 to 4.1 mmHg. The most common adverse event was conjunctival hyperemia which occurred in approximately 50 percent of patients.

The introduction of these two medications ushers in a new era of glaucoma treatment which also includes advances in minimally invasive glaucoma procedures. These latest treatment options offer better side effect profiles and an improved ability to tailor treatment to individual patients and their glaucoma.

References: