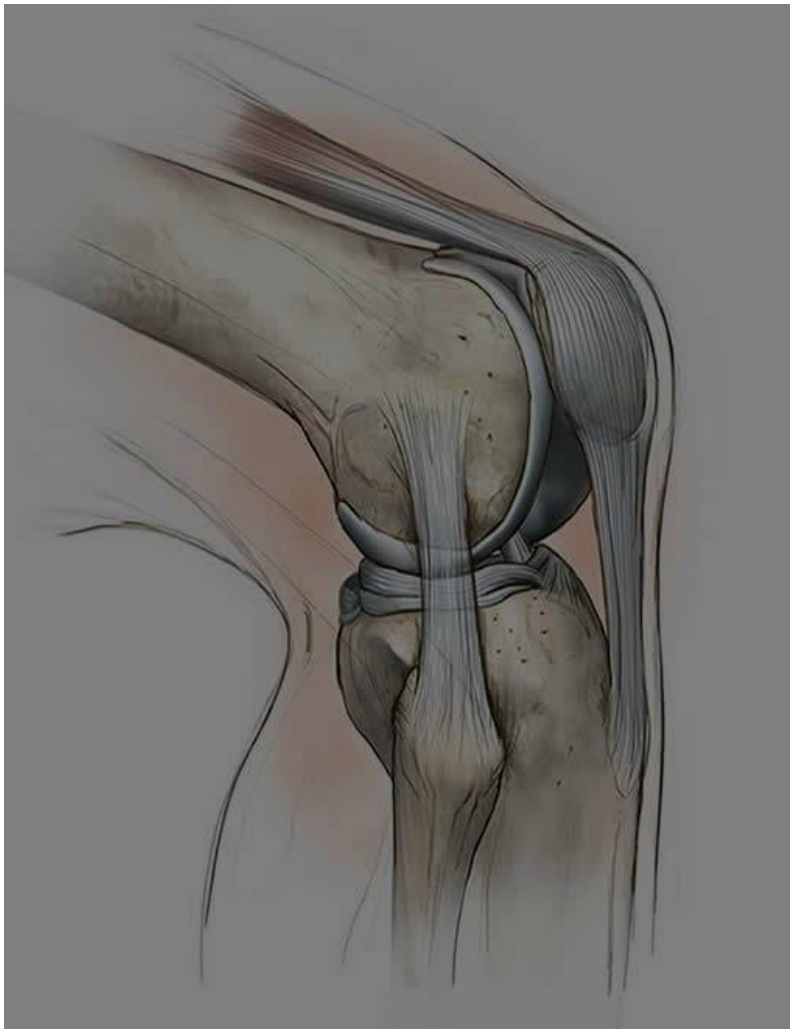
Treatment of Refractory Knee Pain

Steven M. Lobel, MD



Applications in the Knee

Osteoarthritis

Deterioration of the cartilage in the knee joint

Eventual rubbing of bones

One of the most common causes of knee pain

> 10 million people are estimated to suffer from osteoarthritis in one or both knees, in the US alone

40% of 40 y/o's show radiographic evidence of osteoarthritis

More Studies are required to determine the possibility of RF as a good alternative to total knee arthroplasty*

*Radiofrequency Treatment of Chronic Knee Osteoarthritis Pain. Preliminary Results, Maria Luz Padilla del Rey MD, et al.

Treatment Options

Medications
- Tylenol 1000mg bid x7d trial
- NSAID
  - CV risk, renal risk, GI risk
- Tramadol
- Topicals- Know your compounder
- Opiates ???

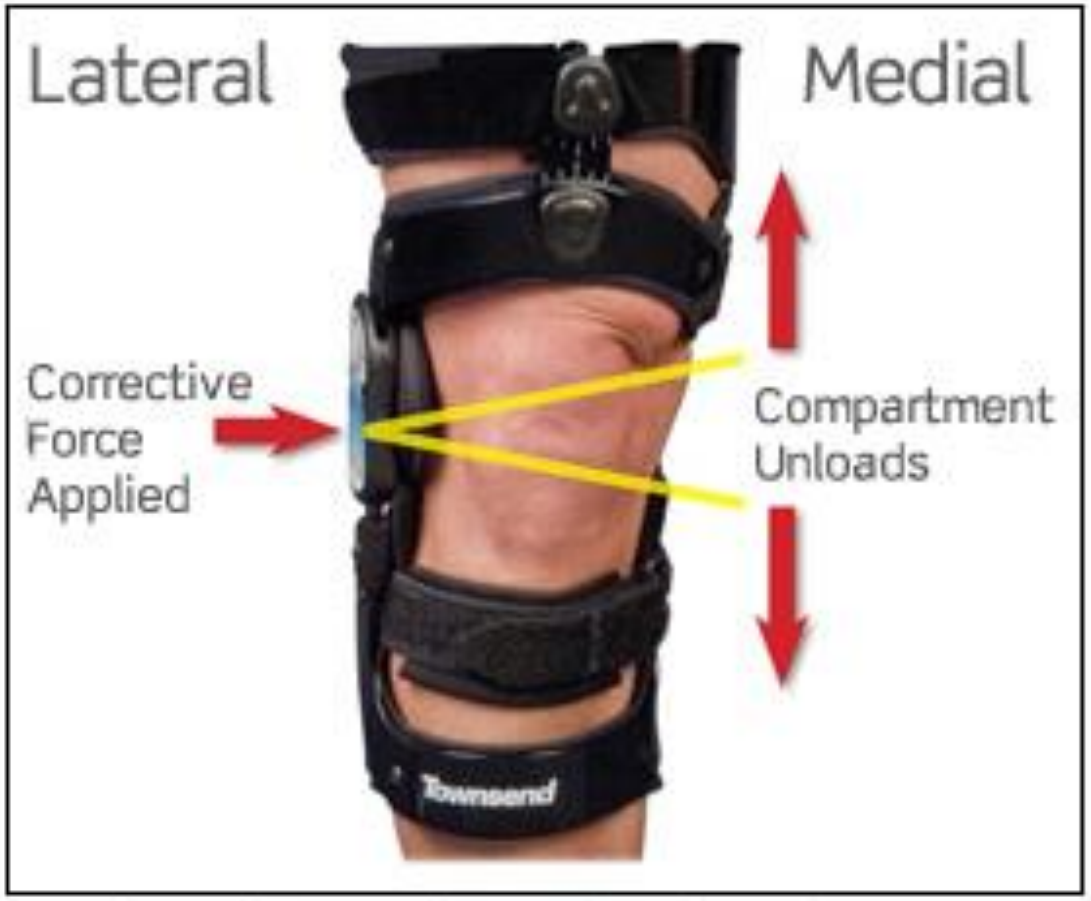
Bracing- Unloader braces have come a long way

Injections
- Steroids
- Viscosupplementation

RF, Pulsed RF? Or Intra-articular

TKR

RF, Pulsed RF? Or Intra-articular



Designed to reduce the load on the damaged area

Delivers corrective three-point pressure to reduce load on the damaged side of the knee.

Anti-Migration Technology

The Synergistic Suspension Strap behind the knee reduces the potential for brace migration or rotation.

Post Knee Replacement

4 Million adults in the US currently live with a total knee replacement

Over half of adults in the US diagnosed with knee osteoarthritis will undergo a total knee replacement

Lifetime risk of primary total knee replacement from the age of 25 is 7% for males and 9.5% for females

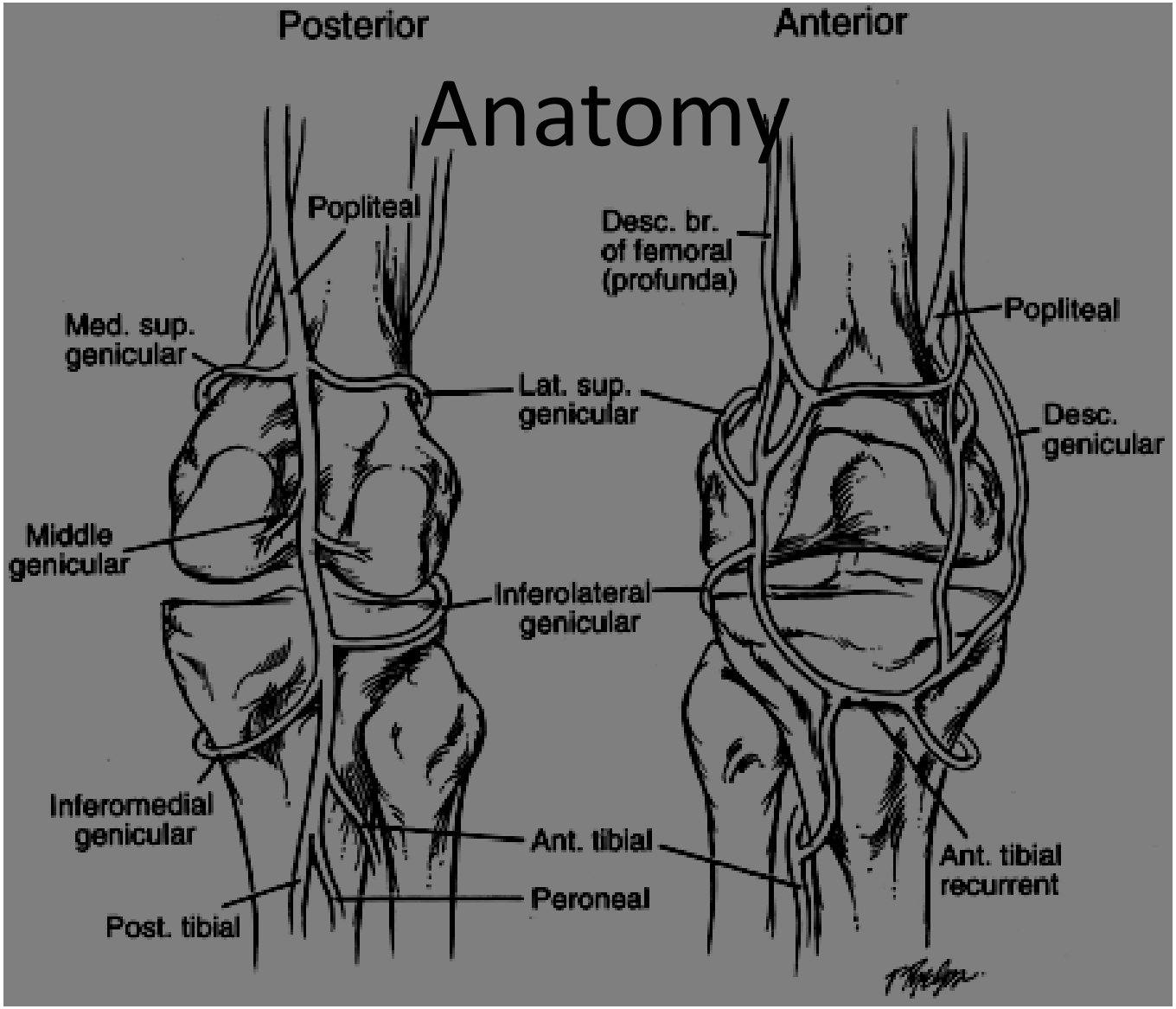
Nerve injuries occur in 1-2% of patients

Persistent pain or stiffness occurs in 8-23% of patients

Preliminary Results show that RF may effectively affect quality of life increase at 6 months*

*Radiofrequency Treatment For Chronic Pain After Total Knee Arthroplasty, Maria Luz Padilla del Rey MD, et al.

Anatomy

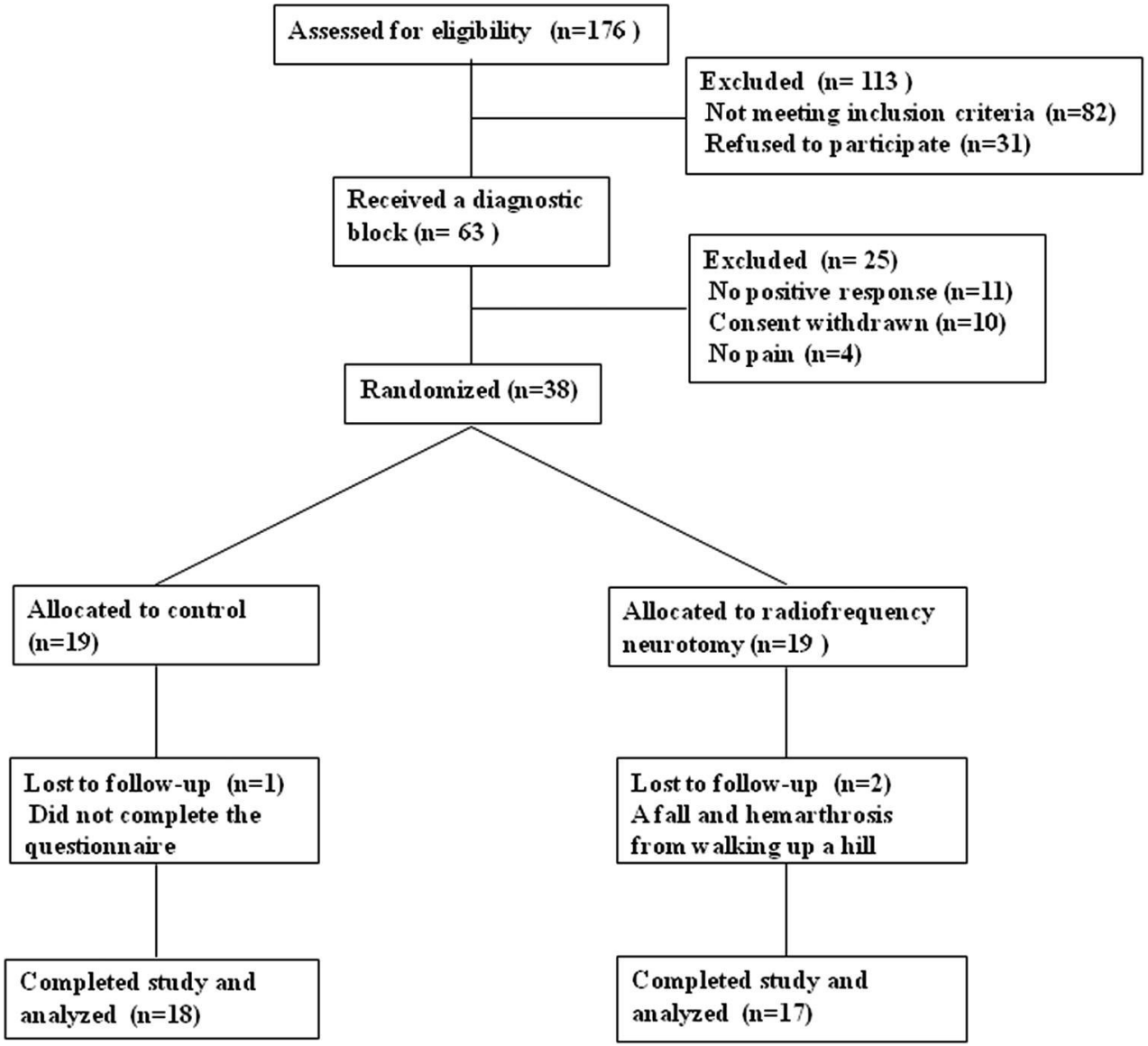


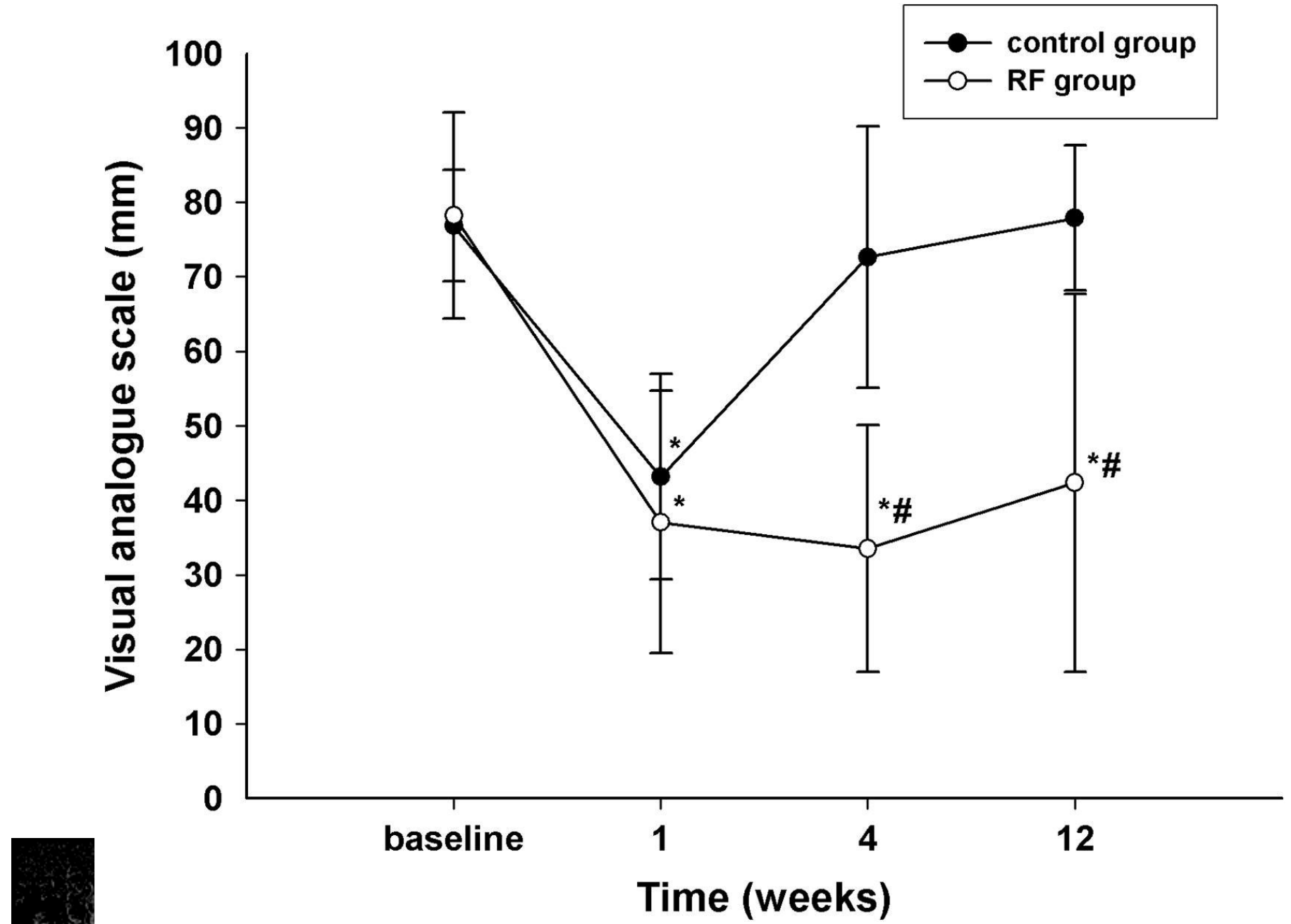
Targeted Nerves: Superior Lateral Genicular Nerve, Superior Medial Genicular Nerve, and the Inferior Medial Genicular Nerve

Radiofrequency treatment relieves chronic knee osteoarthritis pain: A double-blind randomized controlled trial

Woo-Jong Choi, Seung-Jun Hwang, Jun-Gol Song, Jeong-Gil Leem, Yong-Up Kang, Pyong-Hwan Park and Jin-Woo Shin

PAIN®
Volume 152, Issue 3, Pages 481-487 (March 2011)


Assessed for eligibility (n=176)
Excluded (n= 113)
Not meeting inclusion criteria (n=82)
Refused to participate (n=31)
Received a diagnostic block (n= 63)
Excluded (n= 25)
No positive response (n=11)
Consent withdrawn (n=10)
No pain (n=4)
Randomized (n=38)
Allocated to control (n=19)
Allocated to radiofrequency neurotomy (n=19)
Lost to follow-up (n=1)
Did not complete the questionnaire
Lost to follow-up (n=2)
A fall and hemarthrosis from walking up a hill
Completed study and analyzed (n=18)
Completed study and analyzed (n=17)


control group
RF group
Visual analogue scale (mm)
100
90
80
70
60
50
40
30
20
10
0
baseline
1
4
12
Time (weeks)
*
*
*#
*#

Radiofrequency Ablation of Genicular Nerves for the Treatment of Chronic Knee Osteoarthritis

M. Danko, H. Sachdeva, J. Fortman
Anesthesiology, University of Cincinnati, Cincinnati, OH, USA

Introduction: Radiofrequency ablation (RFA) was first demonstrated by Choi (1) to be an effective therapy in the treatment of patients with chronic knee osteoarthritis pain. However, there have been no follow up studies about genicular nerve RFA to confirm its efficacy. There also have been no studies evaluating its use in patients that continue to have pain after total knee arthroplasty (TKA). We present two cases of successful RFA of the genicular nerves in patients with chronic knee osteoarthritis, which included one person with chronic knee pain after TKA.

The procedures for both patients utilized identical methodology. The patient was placed in supine position and fluoroscopy was used to visualize the knee joint anteroposteriorly. The landmarks used for the superior medial (SM) and superior lateral (SL) genicular nerves were the connection of the femoral shaft with the medial and lateral epicondyles. The landmark for the inferior medial (IM) genicular nerve was the medial aspect of the tibia at the shaft-epicondyle intersection. The skin was anesthetized with 1% lidocaine and a 20 gauge RFL 100 mm insulated needle with a 5 mm active tip was advanced towards each of these locations until the lateral view confirmed that the needle tips were at the posterior one-third of the femur and tibia. Sensory stimulation at 50 Hz was performed to confirm correct needle position followed by motor stimulation at 2 Hz to confirm the absence of muscle fasciculation. Lidocaine was injected to anesthetize the nerves and RFA was then performed at 80 degrees Celsius for 180 seconds in the lesion mode.

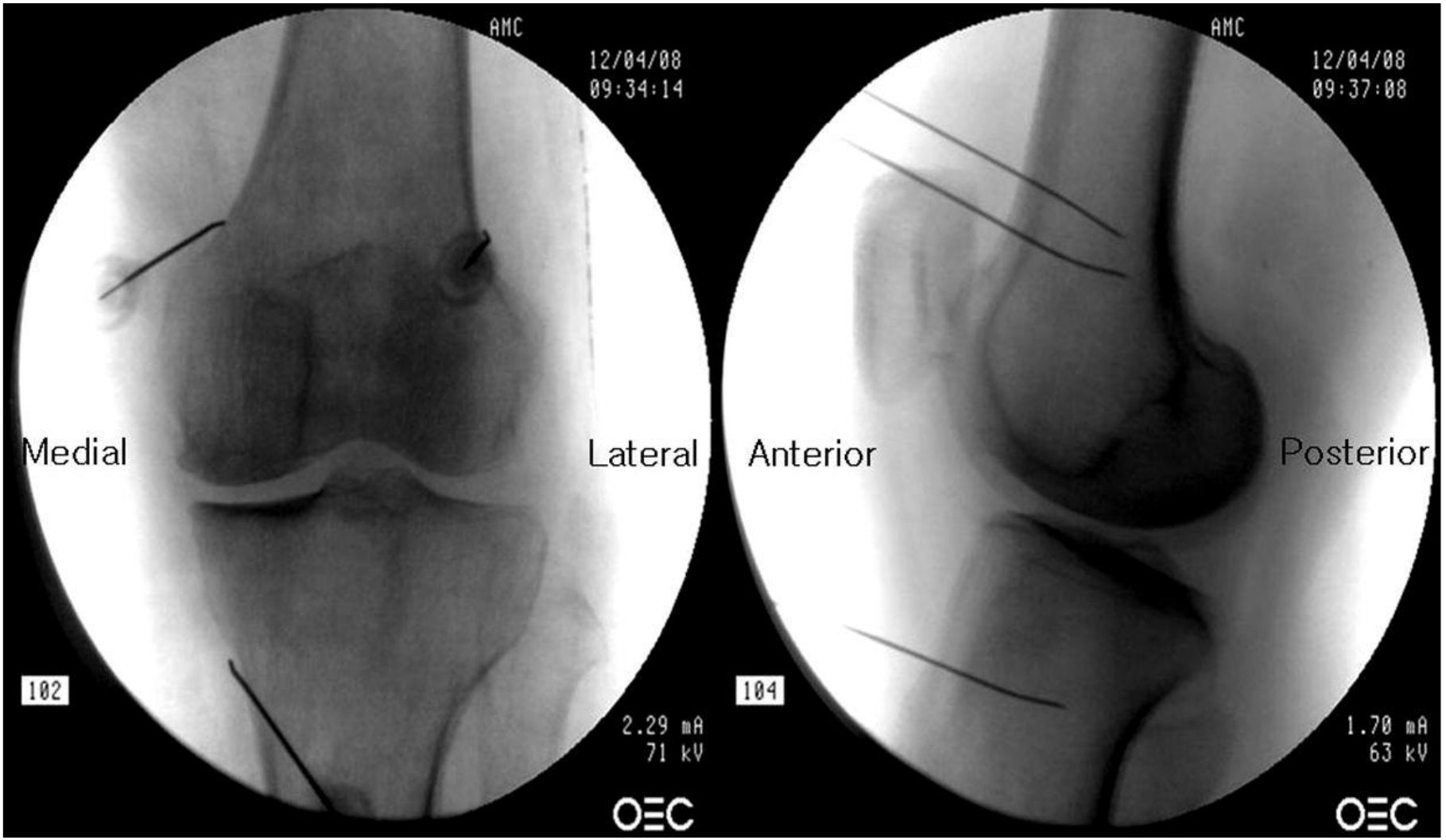
Results: Both patients experienced 100% pain relief immediately after the procedure. At 4 week follow-up, the 29 year old female reported 80% pain relief that was ongoing. At 4 week follow-up, the 52 year old female reported 100% pain relief in the left knee and 75% relief in the right knee. No complications were identified.

Discussion: Greater than 12% of the American population experiences pain and functional limitations from chronic knee osteoarthritis (2). In addition, Liu (3) provides evidence that 53% of people continue to have knee pain after undergoing TKA. Osteoarthritic knee pain was successfully treated in our two patients with genicular nerve RFA providing additional evidence of its utility in the management of this disease. Furthermore, we propose that this procedure is effective for treating persistent pain after TKA.

Procedure

Procedure

1. Patient is placed in a supine position with a pillow under the popliteal fossa to alleviate discomfort
2. True AP fluoroscopic view of the knee joint is obtained
3. Skin and soft tissue are anesthetized with lidocaine
4. RF cannula is advanced percutaneous towards the nerve until bone contact is made at the epicondyle, with the active tip of the needle perpendicular to the nerve
5. Sensory and motor stimulation are performed
6. Additional lidocaine is injected
7. RF Lesion is created at 70-80 degrees for 90 seconds


AMC
12/04/08
09:34:14
Medial
Lateral
102
2.29 mA
71 kV
OEC
AMC
12/04/08
09:37:08
Anterior
Posterior
104
1.70 mA
63 kV
OEC

Complications

- Bleeding
- Infection
- Dysesthesia
- Saphenous nerve injury
- Charcot?