Introduction

After arthroscopic meniscus surgery, patients wish to return to their daily routines as quickly as possible. Adhering to a rehabilitation protocol following CMI implantation, or any other type of arthroscopic surgery, is therefore just as important as the surgery itself.

Patients who have undergone CMI implantation often feel able to return to their accustomed activities sooner than they had expected. It is vital to remind the patient that although the knee operated upon may not be causing discomfort, the actual healing process has only just begun.

The exercise program for rehabilitation following CMI implantation covers a period of six months. The program was designed by experienced CMI users and physiotherapists to serve as a guideline towards successful rehabilitation.

The rehabilitation protocol offers a balanced combination of strengthening and motion exercises providing protection for the newly formed tissue throughout the delicate process of regeneration. It is therefore crucial to adhere strictly to the rehabilitation guidelines set out in this brochure, to ensure the best possible regeneration of the meniscus tissue.

Notes

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COLLAGE N MENISCUS IMPLANT

The CMI® is a type I collagen implant designed to facilitate growth of new tissue to replace removed or missing meniscus tissue in the human knee.
After arthroscopic meniscus surgery, patients wish to return to their daily routines as quickly as possible. Adher- ence to a rehabilitation protocol follow- ing CMi implantation, or any other type of arthroscopic surgery, is therefore just as important as the surgery itself.

Patients who have undergone CMi im- plantation often feel able to return to their occupational activities sooner than they had expected. It is vital to remind the patient that although the knee operated upon may not be causing discomfort, the actual healing process has only just begun.

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The rehabilitation protocol offers a balanced combination of strengthening and motion exercises providing protection for the newly formed tissue throughout the delicate process of regeneration. It is therefore crucial to adhere strictly to the rehabilitation guidelines set out in this brochure, to ensure the best possible regeneration of the meniscus tissue.

Introduction

The CMi is a type I collagen implant designed to facilitate growth of new tissue to replace removed or missing meniscus tissue in the human knee.
Day One through Week Four

**EXERCISE PROGRAM**

**EXERCISES IN SITTING POSITION**
- Vital leg to full extension in horizontal plane (Fig. A).
- Vital leg to full flexion in horizontal plane, then lower slowly (Fig. B).
- Vital leg should be adapted to meet the patient's specific needs.

**WEIGHT-BEARING**
- No weight should be placed on the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**STRENGTHENING**
- Hip flexor strengthening.
- Adductor strengthening.

**WEIGHT-BEARING**
- Leg fully extended.
- Leg extended.

**Week Five through Week Six**

**EXERCISE PROGRAM**

**EXERCISES IN SITTING POSITION**
- Vital leg should support and leverage the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**WEIGHT-BEARING**
- No weight should be placed on the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**STRENGTHENING**
- Hip flexor strengthening.
- Adductor strengthening.

**WEIGHT-BEARING**
- Leg fully extended.
- Leg extended.

**Week Seven through Week Eight**

**EXERCISE PROGRAM**

**EXERCISES IN SITTING POSITION**
- Vital leg should support and leverage the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**WEIGHT-BEARING**
- No weight should be placed on the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**STRENGTHENING**
- Hip flexor strengthening.
- Adductor strengthening.

**WEIGHT-BEARING**
- Leg fully extended.
- Leg extended.

**Week Nine through Four Months**

**EXERCISE PROGRAM**

**EXERCISES IN SITTING POSITION**
- Vital leg should support and leverage the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**WEIGHT-BEARING**
- No weight should be placed on the affected leg.
- Range of motion (0° - 15° degrees) back and forth for the non-affected leg.
- Range of motion (0° - 15° degrees) back and forth for the affected leg.

**STRENGTHENING**
- Hip flexor strengthening.
- Adductor strengthening.

**WEIGHT-BEARING**
- Leg fully extended.
- Leg extended.
EXERCISE PROGRAM

Day One through Week Four

MOTIVATION
- Only passive motion exercises on CMI
- Move or motion exercises using the weight to support the operated leg.
- Range of motion: 0 to 30 degrees (between CMH machine 6 to 10 degrees).

EXERCISES IN SITTING POSITION
- skillet leg: passive dorsiflexion and plantarflexion (Fig. A).
- Using the healthy leg, sole fixed.
- Full extension of the healthy joint, then lower slowly (Fig. B).
- This should be done in a circular motion around the affected leg.
- Range of motion: 0 to 30 degrees.
- Full extension: 6 to 10 degrees.
- Repeat exercise 30 to 50 times, three times daily.
- Duration approximately: 15 minutes for each session.

BRACE
- Must be worn at all times except when performing passive motion exercises, unless otherwise specified.
- Close-setting full extension, 6 degrees.

WEIGHT-BEARING
- Coaches must be used at all times during simulation.

PATELLA Mobilization
- Three times daily. Panels mobilization provided by physiotherapist.

STRENGTHENING
- Active and passive rehabilitation exercises with elastic resistance cord.
- Range of motion: 0 to 30 degrees.
- Duration: 5 to 10 minutes.

Week One

No weight should be placed on the affected leg.
- Range of motion: 0 to 10 degrees.
- Full extension: 6 to 10 degrees.
- Repeat exercise 10 to 15 times, three times daily.
- Duration approximately: 15 minutes for each session.

Week Four

- Passive weight bearing up to 50% of body weight may be placed on the affected leg, when ambulating with crutches.
- Range of motion: 0 to 30 degrees.
- Full extension: 6 to 10 degrees.
- Repeat exercise 20 to 25 times, three times daily.
- Duration approximately: 15 minutes for each session.

Week Seven through Week Eight

MOTIVATION
- Begin the motion exercises and gradually increase to full range of motion on an as tolerated basis.

EXERCISES IN SITTING POSITION
- Ankle sole fixed for full extension of the affected joint, then lower slowly. Keep from fixed during entire exercise.
- Independent exercise of affected leg, with support of healthy leg (Fig. A).
- Range of motion: 0 to 30 degrees (full extension) to full flexion (Fig. B).
- Repeat exercise 50 to 60 times, three times daily.

BRACE
- Must be worn at all times except when performing active motion exercises, unless otherwise specified.
- Close-setting, 5 to 10 degrees.

WEIGHT-BEARING
- Increase to full weight bearing on the affected leg while ambulating with crutches.
- As soon as patient is able to walk without a limp, the braces can be discarded.

PATELLA Mobilization
- Three times daily. Panels mobilization provided by physiotherapist.

STRENGTHENING
- Active and passive rehabilitation exercises with elastic resistance cord
- Range of motion: 0 to 30 degrees (full extension) to maximum 90 degrees (full flexion).
- Duration: 5 minutes.

Week Nine through Four Months

MOTIVATION
- Unrestricted full range of motion.

BRACE
- Unrestricted use of brace.

WEIGHT-BEARING
- Full weight bearing for all activities.

STRENGTHENING
- Cycling (home trainer) without resistance.
- Discontinue without brace: maximum 20 minutes, daily.

Five Months to Six Months

STRENGTHENING
- Exercise with resilient resistance cord.
- Lateral agility exercises using ankle resistance cord (Fig. M).
- Repeat exercises at some time:
- Week one through four: repeat 10 times, once or twice daily, every other day.
- Week three through four: repeat 10 times, once or twice daily, every other day.
- As non-resistance, increase to a maximum of 20 times, twice daily, every other day.

The rehabilitation protocol following CMH implantation is usually completed after six months. Please note, however, that this protocol is a general guideline. The protocol should be adapted to meet the patient’s specific needs.
Day One through Week Four

**MOTION**

- Only passive motion exercises on CPM machine or motion exercises using the walking support to support the operated leg.
- Range of motion 0 to 30 degrees (setting CPM machine at 0-30 degrees).

**EXERCISES IN SITTING POSITION**

- Circular leg isometrics and quadriceps exercise (Fig. A). Using the healthy leg, arch as strongly as possible (at least 90°) and then lower slowly (Fig. B).
- Perform a 10-second hold at the full knee joint and then lower slowly (Fig. D).
- Must be worn at all times except when performing passive motion exercises, unless otherwise specified.
- Must be worn during exercise, 10 degrees.

**WEIGHT-BEARING**

- No weight should be placed on the affected leg.
- Range of motion 0 to 15 degrees.
- Re-exercise 5-10 times, three times daily.
- Duration: approximately 10-15 minutes for each session.

**BRACE**

- Must be worn at all times except when performing passive motion exercises, unless otherwise specified.
- Close-setting extension: 10-15 degrees.

**POSTURAL MUSCULATION**

- Three times daily, panels mobilization supervised by physiotherapist or following instructions of physiotherapist.

**STRENGTHENING**

- A. Knee flexion exercises.
- B. Quadriceps isometrics.
- C. Hamstring isometrics.
- D. Tibialis posterior isometrics.
- E. Patellar mobilization.
- F. Patellar mobilization.

Week One

- No weight should be placed on the affected leg.
- Range of motion 0 to 15 degrees.
- Re-exercise 5-10 times, three times daily.
- Duration: approximately 10-15 minutes for each session.

**MOTION**

- Passive motion exercises on CPM machine or motion exercises using the walking support to support the operated leg.
- Range of motion 0 to 30 degrees (setting CPM machine at 0-30 degrees).

**EXERCISES IN SITTING POSITION**

- Circle leg isometrics and quadriceps exercise (Fig. A). Using the healthy leg, arch as strongly as possible (at least 90°) and then lower slowly (Fig. B).
- Perform a 10-second hold at the full knee joint and then lower slowly (Fig. D).
- Must be worn at all times except when performing passive motion exercises, unless otherwise specified.
- Must be worn during exercise, 10 degrees.

**WEIGHT-BEARING**

- No weight should be placed on the affected leg.
- Range of motion 0 to 15 degrees.
- Re-exercise 5-10 times, three times daily.
- Duration: approximately 10-15 minutes for each session.

**BRACE**

- Must be worn at all times except when performing passive motion exercises, unless otherwise specified.
- Close-setting extension: 10-15 degrees.

**POSTURAL MUSCULATION**

- Three times daily, panels mobilization supervised by physiotherapist or following instructions of physiotherapist.

**STRENGTHENING**

- A. Knee flexion exercises.
- B. Quadriceps isometrics.
- C. Hamstring isometrics.
- D. Tibialis posterior isometrics.
- E. Patellar mobilization.
- F. Patellar mobilization.

Week Seven through Week Eight

**MOTION**

- Passive motion exercises and gradually increase to full range of motion on an incline.

**EXERCISES IN SITTING POSITION**

- Quadriceps isometrics for full extension of affected knee joint, then lower slowly. Keep foot firmly fixed during entire exercise. Independent exercise of affected leg, without support of healthy leg (Fig. H).
- Range of motion 0 degrees (full extension) to 90 degrees maximally (Fig. G).
- Re-exercise 50 times, three times daily.

**BRACE**

- Must be worn at all times except when performing motion exercises, unless otherwise specified.
- Close-setting: 0-60 degrees.

**WEIGHT-BEARING**

- Increase to full weight bearing on the affected leg, while ambulating with braces.
- As soon as patient is able to walk without a limp, the braces can be discarded.

**POSTURAL MUSCULATION**

- Three times daily, panels mobilization supervised by physiotherapist or following instructions of physiotherapist.

**STRENGTHENING**

- A. Knee flexion exercises.
- B. Quadriceps isometrics.
- C. Hamstring isometrics.
- D. Tibialis posterior isometrics.
- E. Patellar mobilization.
- F. Patellar mobilization.

Week Nine through Four Months

**MOTION**

- Unrestricted full range of motion.

**BRACE**

- Unrestricted use of brace.

**WEIGHT-BEARING**

- Full weight bearing.

**STRENGTHENING**

- Cycling frame based on increased resistance instructions of physiotherapist.
- Cycling without brace maximum 45 minutes, daily.

Week Five through Six Weeks

**MOTION**

- Passive motion exercises on CPM machine or motion exercises using the walking support to support the operated leg.
- Range of motion 0 to 30 degrees (setting CPM machine at 0-30 degrees).

**EXERCISES IN SITTING POSITION**

- Healthy leg provides support and lever-angle exercise (Fig. A). Using the healthy leg, arch as strongly as possible (at least 90°) and then lower slowly (Fig. B).
- Perform a 10-second hold at the full knee joint and then lower slowly (Fig. D).
- Must be worn at all times except when performing passive motion exercises, unless otherwise specified.
- Must be worn during exercise, 10 degrees.

**WEIGHT-BEARING**

- Increase to full weight bearing on the affected leg, while ambulating with braces.
- As soon as patient is able to walk without a limp, the braces can be discarded.

**POSTURAL MUSCULATION**

- Three times daily, panels mobilization supervised by physiotherapist or following instructions of physiotherapist.

**STRENGTHENING**

- A. Knee flexion exercises.
- B. Quadriceps isometrics.
- C. Hamstring isometrics.
- D. Tibialis posterior isometrics.
- E. Patellar mobilization.
- F. Patellar mobilization.

Five Months to Six Months

**STRENGTHENING**

- Exercising with resistance cord.
- Lateral agility exercises using an unstable surface (Fig. L).
- Repeat exercises at some tension:
  - Week one to four: repeat 30 times, once or twice daily, every other day.
  - Week three through four: repeat 30 times, once or twice daily, every other day.
  - At the maximum level, increase to a maximum of 50 times, twice daily, every other day.

The rehabilitation protocol following OR is implementation is usually completed after six months. Please note, however, that this protocol is a general guideline. The protocol should be adapted to meet the patient’s specific needs.
Rehabilitation after arthroscopic meniscus surgery, patients wish to return to their daily routines as quickly as possible. Adherence to a rehabilitation protocol following CMI implantation, or any other type of arthroscopic surgery, is therefore just as important as the surgery itself.

Patients who have undergone CMI implantation often feel able to return to their accustomed activities sooner than they had expected. It is vital to remind the patient that although the knee operated upon may not be causing discomfort, the actual healing process has only just begun.

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