

HIP FOLLOW-UP

It is important to review the status of your hip implant(s) during an office visit at six weeks, one year and every other year postoperatively thereafter for your safety even though you are feeling great. Long distance follow-up evaluations for out-of-state patients are fine. We would like to ask you to complete the following evaluation protocol.

- 1) We keep track of each hip separately in our database. Therefore, I would like to request that you fill out **TWO** separate Hip Follow-Up Patient Self Rating forms if we are evaluating both hips, even if both are identical.
- 2) Please sign the Mission statement and disclosure form and send it to us
- 3) Physical Therapy :
 - Add your name to the physical therapy evaluation request
 - Give the order and physical exam form to your physical therapist
 - Send the results to us
- 4) Hip X-Ray:
 - Add your name to the x-ray request;
 - Have the x-ray of your hip(s) done at your local hospital, and request a CD copy of this x-ray
 - Mail a CD of the digital x-ray images (preferred) or x-ray films to us
- 5) Metal Ion Test:
 - Add your name to the prescription
 - Have the test done at the nearest lab
 - Send the results to us

As soon as we receive all of the above, I will review them and send you a written response. If you prefer to travel here for an office visit for evaluation, please call our appointment line to arrange this (803) 256-4107 (routine office charges will apply). If you are having significant problems with your hip, I will need to see you in the office for complete examination to best diagnose it.

Thank you for your attention to this matter. If you have any questions, please contact us for assistance.

Thomas P. Gross MD

Lee Webb, N.P.

Attached Forms:

1. Follow up hip questions
2. Mission statement and disclosure
3. Physical exam form*
4. Physical therapy evaluation letter *
5. Physical therapy evaluation request*
6. Hip XR request
7. Phase II hip exercises
8. Metal ion test[#]

*** These forms are not needed after 2 years if your range of motion exam was previously done.**

This test is ONLY needed for two-year follow-up and afterwards. Currently, if you have done this test and have sent the result to us, you do NOT need to do it again. Also, if you are a bilateral patient, you should wait until both of your operated hips have reached two-year follow-up after the latest surgery.

Please contact us with any follow-up questions:

- E-mail: grosspatientfollowup@midlandsortho.com
- Call: (803) 933-6147
- FAX: (803) 933-6339

If you don't have any questions, please follow the protocol and fill out each form below, then FEDEX the packet to:

Dr. Thomas P. Gross
Attn: hip follow-up
Midlands Orthopaedics
1910 Blanding St.
Columbia, SC 29201

Thomas P.Gross, M.D
Updated Jan-2008

Hip Follow-Up Patient Self Rating Form

Current Date 7/14/08

All information will be treated as strictly confidential!

Last Name

First Name

Medical Record #

Date

A. INTRODUCTION: The purpose of this questionnaire is to objectively grade the severity of your hip problem as accurately as possible. Of course the questions are subjective. I ask people to answer these questions when initially evaluating their hip, and again at intervals after surgery to assess our results. We keep track of each hip separately in our database. Therefore, I would like to request that you fill out two separate forms if we are evaluating both hips today, even if both are identical. Thank you for your assistance in this matter.

1. This questionnaire is filled out for the purpose of evaluation of my:

Right hip

Left hip

2. I have significant problems with my:

Right hip

Both hips

Left hip

Neither of my hips

3. Dr. Gross has operated on:

Right hip

Both hips

Left hip

Neither of my hips

4. Another surgeon has performed a major hip surgery on:

Right hip

Both hips

Left hip

Neither of my hips

5. If Dr. Gross has operated on my hip(s), please check off the operation (more than one may apply):

Total hip replacement (with a stem)

Hip surface replacement

Revision of a hip replacement (redo operation)

Other

6. Please list the date of your latest operation performed by Dr. Gross on the hip being evaluated by this form:

N/A

Date

7. Please indicate the closest follow-up interval calculated from the date of your surgery:

- 6 weeks
 - 3 months
 - 6 months
 - 1 year
 - 2 years
 - 3 years
 - 4 years
 - 5 years
 - 6 years
 - 7 years
 - 8 years
 - 9 years
 - 10 years
 - 11 years
 - 12 years
 - 13 years
 - 14 years
 - 15 years
 - 16 years
 - Longer
-

B. COMPLICATIONS:

1. Did you have any complications after surgery:

- None
- Wound Infection
- Deep Venous Thrombosis (blood clot in the leg)
- Pulmonary Embolus (blood clot traveling to the lungs)
- Partial Sciatic Palsy (foot drop, nerve injury)
- Dislocation
- Fracture
- Implant came loose
- Other

2. If you had a complication, did it require further surgery:

- No
- Yes

C. CLINICAL SCORE: *This score should reflect how your hip has been functioning now (post surgery).* The questionnaire was modified to allow scoring a standard Harris Hip Score (HHS). Please mark the category that fits your condition best. People with arthritis have good and bad days; your answers should reflect your usual days. I understand that the answers may not always exactly fit your condition.

1. What category most closely represents your pain level in your hip?

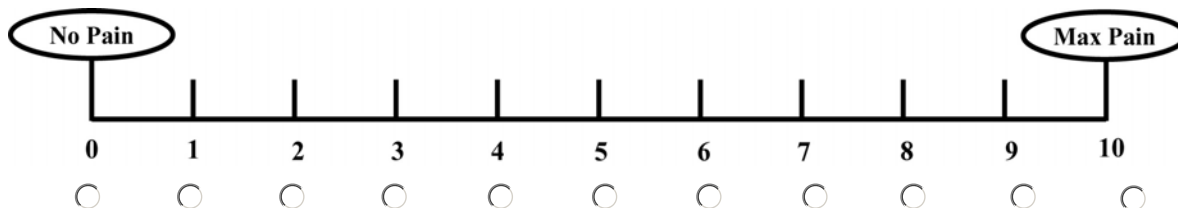
- None: or it is so slight that I ignore it.
- Slight: occasional pain. I have no compromise in activity.
- Mild: there is no effect on ordinary activity
I have pain after unusual activity
I may use aspirin or anti-inflammatory medicines
- Moderate: the pain is tolerable
I make concessions
I may occasionally use Vicodin or some other narcotic
- Severe: I have serious limitations to my lifestyle
- I am totally disabled by this hip

2. If you have some pain, where is it located? (Check all that apply)

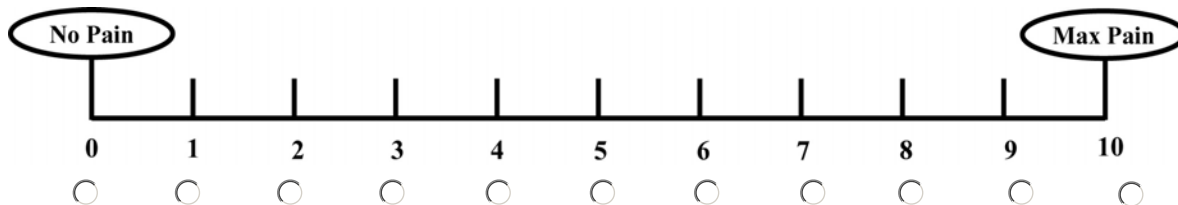
- None
- Groin
- Side of hip near the scar
- Front of thigh
- Side of thigh
- Buttock
- Others

3. Pain Assessment - Visual Analog Scale: Please circle your current level of pain using the scale below.

On most regular days:



On my worst days:



4. Limp:

- None
- Slight
- Moderate
- Severe
- Unable to walk

5. Use of walking support:

- None required
- I use a cane or stick for long walks
- I almost always use a cane or stick
- I use one crutch most of the time
- I use two crutches or a walker
- I am unable walk across the room

6. Without stopping for a break, on most days, I am usually able to walk:

- Over one mile
- The equivalent of 6 average city blocks
- 2-3 average city blocks
- Less than one block
- I can only get from bed to chair

7. Stair climbing:

- Normally foot over foot without pulling on a rail
- Normally foot over foot with some help from the rail
- Usually not foot over foot; but instead, leading up with the non-painful hip one step at a time
- I can't manage to walk up stairs

8. Putting on socks and tying shoelaces:

- I can put them on with ease
- I can put them on, but it is difficult, I may use an assistive device
- I can't put them on, except for slip-on shoes

9. Sitting:

- I can sit in any chair for more than one hour
- I can only sit in a high chair, or I can only sit for one half an hour
- I am unable to sit in any chair

10. Transportation:

- I am able to get in and out of a car or public transportation by myself
- I need help to get in and out of a car or public transportation

11. Please name any unrelated orthopedic or medical problems that are severe enough to adversely affect your overall hip score. Please briefly explain:

N

- Other problems:

12. At this point is your hip better than before your surgery? What statement most accurately describes your new hip?:

- It is better than my pre-arthritis normal hip was
- It feels just like a normal hip
- It is much better than before surgery, but still has some minor aches and pains
- It is slightly better than before surgery
- It is about the same
- I am worse

D. ACTIVITY SCORE: PLEASE MOVE ON TO SECTION E AND SKIP THIS SECTION (SECTION D, UCLA ACTIVITY SCORE) IF YOU ARE LESS THAN 8 MONTHS POSTOPERATIVE (AFTER YOUR SURGERY).

1. UCLA Activity Score

When this section is applicable, please choose the one response that most closely fits your activity level:

- Whole inactive, dependent on others, and can not leave residence 1
- Mostly inactive or restricted to minimum activities of daily living 2
- Sometimes participates in mild activities, such as walking, limited housework and limited shopping 3
- Regularly participates in mild activities 4
- Sometimes participates in moderate activities such as swimming or could do unlimited housework or shopping 5
- Regularly participates in moderate activities 6
- Regularly participates in active events such as bicycling 7
- Regularly participates in active events such as golf or bowling 8
- Sometimes participates in impact sports such as jogging, tennis, skiing, acrobatics, ballet, heavy labor or backpacking 9
- Regularly participates in impact sports 10

2. If possible, please list 2-3 activities for each of the first two questions. An exhaustive list is not necessary.

a. Please list activities you are regularly participating in:

b. Please list the most vigorous activities that you have occasionally participated in since your surgery:

c. My activity level now is (similar to, lower than, greater than) when my hip(s) first became arthritic?

E. CONCLUSION:

1. Knowing what you now know, do you feel you made the right decision to have this surgery?

Yes No

2. Do you have any other comments that you would like to share?

If your address or phone number has changed since your last visit, please enter your new address or phone number:

Address

City State Zip Code

Country

Phone Number E-mail

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Mission Statement and Disclosure Form

Thomas P. Gross, M.D.

Revised Jan. 17, 2008

Practice limited to hip and knee reconstruction,
Midlands Orthopaedics, p.a. 1910 Blanding Street, Columbia, SC 29201

I am a specialist in the field of hip and knee replacement. I am in private practice, but I am also heavily involved in clinical research, teaching and orthopaedic implant development. I perform all of my surgery personally, with the assistance of Lee Webb, Nurse Practitioner. No residents or fellows will do your operation. Visiting surgeons are frequently present to observe my operations to learn the latest techniques; they do not participate in the operations themselves. I do receive royalties and research support from various orthopaedic implant companies. I do not get paid directly for the implants used in your surgery. Joint replacement implants in the Columbia marketplace are excluded from my royalty contract. I will be happy to answer specific questions you have regarding implants I intend to use in your operation.

It is generally recognized as the standard of care for joint replacement surgeons to provide long-term follow up evaluations for patients they have operated on. Although we do bill for these services, we primarily earn our living from performing surgery. As a surgeon involved in clinical research, it is *particularly* important to me to continue a long-term relationship with all patients on whom I operate. I use all information gathered in my practice as material for teaching and scientific presentations and papers. Patient identity is carefully protected in all presentations. (The only exception is for patients who *specifically* agree to provide testimonials about their cases. These patients write up a description of their experience for public presentation.)

Every medical treatment has potential to result in complications. Surgical treatments all have their own sets of possible complications. I will disclose the most common ones to you; most are posted on my website. If you should have a complication, I will deal with it promptly and directly. Even out of state patients should keep me well informed of any that develop. It is my preference (and in your best interest) for me to deal with all surgical complications personally. Nonsurgical (medical) complications can be dealt with by your local primary care physician or other non-orthopaedic specialist, but please keep me informed and let me advise you. Surgical complications may require extra unexpected trips to Columbia, SC, but this is essential for you to achieve the best possible outcome.

One reason you may have chosen me as a surgeon is because my experience allows me to perform surgery with a very low complication rate. However, equally important is my knowledge in how to deal with postoperative

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complications appropriately. Even after they occur, a good outcome can often be achieved with appropriate skilled intervention.

I expect to see all patients for follow up evaluations at four to six weeks postoperatively and one year postoperatively in my office. If you are an out of state patient, local follow up can be arranged (but is *not* preferred). If your case is routine and stable, long-term follow up (two years, five years, 10 years, and 15 years) can be done via online questionnaire and digital x-ray. I will provide you with a written reply and will not charge you for reviewing your online questionnaire and x-rays. If a phone consultation is required (after three months post-op) a fee may be assessed. If you do have specific problems, on site personal evaluation by me is recommended.

I have read the above statement and agree to honor my commitment to provide timely follow up information. I understand that providing this information will benefit not only me, but also Dr. Gross and many future patients of his practice and elsewhere. I hereby agree to play my part in furthering the practice and science of joint replacement surgery. This contract is not legally enforceable, but represents my good faith agreement under which I wish to establish a doctor-patient relationship with Dr. Gross.

Patient's Signature

Date

Thank you. My commitment to you is the highest level of care, both technically and personally. I strive to continue to elevate the level of my expertise by dealing with complications directly and promptly and by continuing a rigorous and systematic scientific review of my surgical outcomes.

Thomas P. Gross, MD

1/31/2008

Date

<http://grossortho.com/>

HIP FOLLOWUP PHYSICAL EXAM

Thomas P. Gross M.D
Midlands Orthopaedics
1910 Blanding St
Columbia SC 29201

<p>Office Use Only</p> <p>Date Received: ____/____/____</p> <p>Office Record Number: _____</p>

Name of patient being evaluated: _____

Date of Surgery: Right: _____ Left: _____

Type of Surgery: Right: _____ Left: _____

Interval from Surgery:

Right: N/A	Left: N/A
6 weeks	6 weeks
1 year	1 year
2 year	2 year
Or _____	Or _____

TO BE COMPLETED BY A PHYSICAL THERAPIST

- Patient Charnley Category:**
 A1: Unilateral with opposite hip normal
 A2: Bilateral with satisfactory function of opposite hip
 B: Unilateral other hip impaired __
 C: Multiple arthritis or medical infirmity

2. Range of Motion:	Right	Left
a. Flexion Contracture*	_____	_____
b. Flexion to**	_____	_____
c. abduction at 45 degees of flexion to	_____	_____
d. adduction at 45 degrees of flexion to	_____	_____
e. external rotation at 45 degrees of flexion to	_____	_____
f. internal rotation at 45 degrees of flexion to	_____	_____
g. IR with knee flexed to 90 degrees ***	_____	_____

* Enter 0 if the leg is able to lie flat on the exam table.
 ** Do not push past 100 degrees before 1 year
 ***Do not perform this one until one year after surgery please

- Gait:**
 - Normal
 - Antalgic
 - Trendelenburg
 - Short Leg
 - Other _____

- Trendelenburg Sign:**

- Positive
 - Negative
- 5. Active SLR painful?**
- No
 - Yes If Yes Where? _____
- 6. Strength SLR (grade 0-5):** _____
- 7. Strength Abduction (grade 0-5):** _____
- 8. Leg Length:**
Equal Left short _____ Right short _____
- 9. Tender:**
- No
 - Yes If yes, where? _____
- 10. Condition of incision:** _____

Physical Therapist Signature:

Date: _____

Print Name: _____

Address: _____

Please give a copy to the patient and mail one to me at the above address. Thank you.

Updated 1/31/08

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orthopaedics, p.a.

(803) 256-4107

Fax: (803) 933-6339

1910 Blanding St.

Columbia, SC 29201

1013 Lake Murray Blvd.

Irmo, SC 29063

Dear Physical Therapist:

The person presenting this form has had a hip surface replacement performed by Dr. Thomas P. Gross _____ weeks/years ago. We are asking that you objectively evaluate his/her hip and send me a report. If the patient is less than one year postop, the hip cannot be pushed into extreme flexion, adduction and internal rotation. (See form). Please record the range of motion that can be achieved by gentle examination in this case.

If the patient is approximately six weeks postop, please review and assist them with my Phase II Hip Exercise Program. The patient has been instructed to bring this with him/her in this situation.

Thomas P. Gross M.D

Please FAX to: 803-933-6339 and give the patient a copy.

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orthopaedics, p.a.

(803) 256-4107
1910 Blanding St.
Columbia, SC 29201
1013 Lake Murray Blvd.
Irmo, SC 29063

FOR _____

R ADDRESS _____ DATE _____

Please evaluate both hips in the above patient for range of motion and strength and provide a report on my standardized form included.

Thomas P. Gross M.D

Please FAX to: 803-933-6339 and give the patient a copy.

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(803) 256-4107
1910 Blanding St.
Columbia, SC 29201
1013 Lake Murray Blvd.
Irmo, SC 29063

FOR _____

R ADDRESS _____ DATE _____

Right/Left/Both Hips (circle one)

1. AP pelvis standing (please label as "STANDING")
2. AP pelvis supine (please label as "SUPINE")
3. Johnson lateral right/left/bilateral (Crosstable lateral)

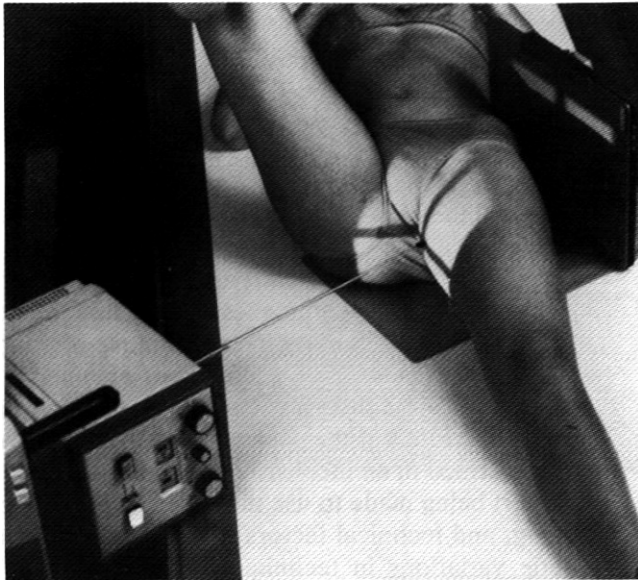
Diagnosis: OA hip 715.35, hip pain 719.45

Please provide the patient with a digital copy on CD of these x-rays to be sent to my office for my review.

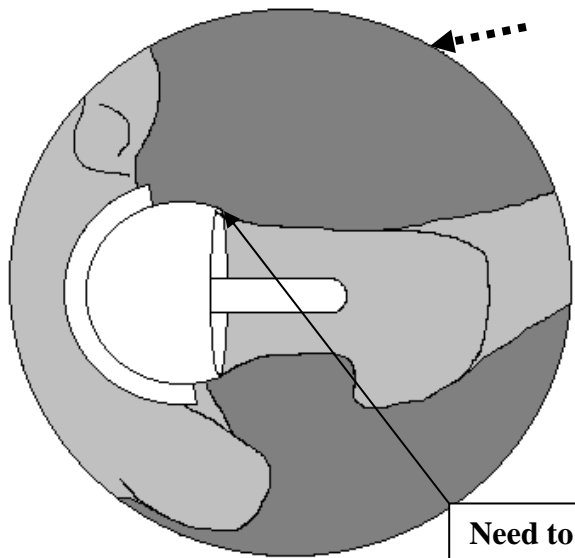
Thomas P. Gross, MD
1910 Blanding Street
Columbia, SC 29201
803-933-6147

Thomas P. Gross M.D

Please FAX to: 803-933-6339 and give the patient a copy.



Instructions for Johnson Lateral for patients post hip resurfacing



The perfect true lateral:

- Visualize the anterior and posterior neck, just inferior to the femoral component.
- **The more neck Anteversion, the more the hip needs to be flexed...**

Need to see cortex at Component-Neck junction

C

Fig. 10-2. True-lateral (Johnson or cross-table) lateral view. (A) Position of patient. The long axis of the left femoral neck is localized by imaging a line drawn between the anterosuperior iliac spine and the superior border of the symphysis pubis, determining the midpoint of the line, and then palpating the greater trochanter and imaging a point 1 inch

distal to it. A line drawn between these two points parallels the long axis of the femoral neck. **(B)** The cassette is placed in the vertical position with its cephalad border in contact with the body at the level of the iliac crest; it is parallel with the long axis of the femoral neck. The central ray is perpendicular to the long axis of the femoral neck and cassette and is centered 2.5 inches below the point of intersection of the localization lines. **(C)** Roentgenogram of hybrid surface arthroplasty. The ischium is toward the bottom of the image. (Fig. B, from Ballinger PW: Merrill's Atlas of Radiographic Positions and Radiologic Procedures, 6th Ed., Vol. 1. CV Mosby, St. Louis, 1986, with permission.)

Thomas P. Gross, M.D.
Total Joint Replacement
Midlands Orthopaedics
1910 Blanding Street
Columbia, SC 29201
www.grossortho.com

**Phase II hip exercise/instruction sheet (after 6 weeks)
Fast Recovery and Slow Down**

(Updated 6/29/2008 LAW)

PHASE II: At six weeks, twelve weeks or later, it will be decided that you can progress to this phase. Do not attempt these exercises prior to formal instructions.

1. **a.) *Rapid Recovery Program:*** You should now be walking 1 mile or more without a cane or crutch. If you still feel somewhat weak or unbalanced, use of a cane for a few more weeks is occasionally necessary. You should start practicing climbing stairs; foot over foot with a handrail. Continue a progressive walking program; 1 to 2 miles per day is best.

b.) *Modified (slow down) recovery program:* 10% weightbearing on operative leg with crutches for first six weeks post op. Use a cane for four weeks thereafter, no foot-over-foot stair climbing until off the cane at 2.5 months postoperatively. Do not start # 4 or # 6 until 2.5 months postoperatively. Refer to our website www.grossortho.com under current topics regarding bone health and hip resurfacing for guidance on managing your bone health over the long term.

2. ***Position precautions:*** You may now bend your hip past 90°. Avoid extreme stretching or bending until 6 months post op. You can get to your feet safely by flexing your hip while keeping your knees out to the side. A foot stool may be helpful. It is perfectly safe to put on your shoes and socks.

3. ***Exercises:***

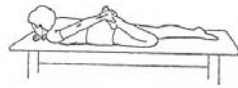
- a. *Stretching***

- I. Sit in a chair with the knees apart and the feet together. Gently bend, reaching for the foot of the involved leg, feel the pulling and stretching. You should not feel sharp pain. Eventually, you will be able to reach your feet.
- II. Lie back on the bed; bend the knees up, keeping your feet together on the bed. Let the knees fall widely apart. Place your hands on the inside

of your thighs and gently push your knees apart. Feel the pulling and stretching in the groin. Again, sharp pain should not be felt.



- III. Quad stretching: lie prone on a surface as shown. Hold on to your ankle and bend the knee so that you feel a stretch. Hold for 30 seconds. Do 10 repetitions 3 times per day.

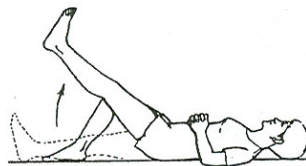


- IV. Psoas stretching: Stand grasping your operative ankle as shown. Bend knee further by pulling ankle toward buttocks. Do not lean forward or allow the back to arch. Hold 30 seconds. Do 10 repetitions 3 times per day.



- b. **Leg Lifts** - These should be done in two positions: supine (lying on your back), side (lying on the opposite side).

- I. Begin first in the supine position. Lift the leg approximately 12 inches off of the bed and hold it for a slow count of 10. During this count, contract all the muscles in the leg, performing an "isometric" contraction, and then slowly let the leg down to the bed. Work up to the point where you can do 15-30 of these. When you can do 30 repetitions easily, add one pound of weight at the ankle and drop back to 15 repetitions, again working slowly back up to 30. You may either purchase commercial ankle weights or use a purse and hang it over your ankle. Put one can of food in it (approximately one pound). When you again reach 30 repetitions easily with one pound of weight, add a second pound, drop back to 15 and slowly work back up to 30. When you can perform 30 repetitions with two pounds, the muscles will be of normal strength.



- II. After completing the exercises in the supine position, turn into the side lying position with the opposite hip down. Lift the leg approximately two feet away from the lower leg, keeping the knee straight, and hold for a count of five while performing an isometric contraction. Repeat again. Follow the same instructions as above for the number of repetitions and the addition of ankle weights.



4. **Exercycle:** If you have available an Exercycle, this will be a good exercise. The seat should be in a high position so that your hip is not flexed beyond 90 degrees. You should begin with gentle resistance to pedaling and work up to a normal resistance. You should use the Exercycle for between 10 and 20 minutes. This exercise is not essential, but is helpful if you have one available. Elliptical trainer or Nordic tracks are also excellent substitutes. Regular bicycles are fine at 6 months post op. We do not want you on a regular bike before this because your femur is weak and prone to fracture if you fall. **(Patients on slow down program please don't start until you are off the cane.)**
5. **Swimming:** This is an excellent exercise. You should use a gentle flutter kick and avoid the frog kick. The side stroke with a scissors kick is also allowable. Water aerobics are also an excellent form of exercise.
6. **Workouts:** If you have a gym membership to the gym, we encourage a gradually increasing program of light weight exercises gradually increasing to not more than 50 lbs by 6 months post op. **(Patients on slow down program please don't start until you are off the cane.)**
7. **Driving:** If you have an automatic car, as soon as you feel strong and are not taking narcotics, you may drive. If the operative leg is the right, use the left to brake until you can walk without a limp.
8. **Sexual Intercourse:** As comfort will allow. Just remember not to flex the hip to extremes.
9. **Dental Visits and surgical procedures:** This is a recommendation you should follow all of your life. This is controversial in the medical and dental community, but it is **my** recommendation to you. Life time risk for infection spreading to your joint is less than 1/2%. You will need to take antibiotics prior to any dental procedure. The following is a guide but your dentist may substitute.
- If you are not allergic to penicillin, take: Amoxicillin 500 mgs x 4 tablets 1 hour prior to any dental procedure.
 - If you are allergic to Amoxicillin or Penicillin, take: Clindamycin 600 mgs 1 hour prior to procedure.
 - If possible, all dental work should be delayed until 6 weeks following surgery.

- Antibiotic coverage for other surgical procedure or infections is individualized according to the possible bacterial contamination, and therefore, you should notify the respective physician or surgeon so they can prescribe the appropriate medication.
- Any infection should be treated promptly by your primary care physician

10. Moderation: In general, over the first year post op, all exercises and sports attempted should be approached gradually. There should be no sudden increase in activity level. You will be allowed full activity without restrictions after 6 months. Moderation will allow your implant to last longer.

11. Full Healing It takes up to one year for your hip to fully heal. Expect some soreness, swelling, and minor aches and pains during this time. At 6 months you have passed the risk period for femoral neck fracture.

12. Limitations until 6 months post op:

1. No bending the hip into extreme flexion (eg squatting) or crossing the legs at the knees
2. No lifting more than 50 lbs. routinely
3. No impact loading such as jumping and jogging

If an activity (that you are contemplating performing prior to 6 months postop) does not violate these rules, you may do it.

13. Wound/scar appearance:

Your scar will gradually fade over 1 year. It will get smoother and the purple color will disappear. There are many wound potions and scar lotions being sold. You may use them now, but be advised that there is no scientific evidence that they will improve the eventual appearance of your wound. Your wound will naturally mature and become fainter over 1 year whether or not you apply any potions.

14. Routine Follow up:

I would like to see you personally here in the office for a checkup at 1 year post op. This is when you have reached the maximum medical improvement. There after we will ask you to provide us computer based followups at 2, 5, 10, and 15 years. Please do not hesitate to call us or come in at other times if you have a problem or concern.

For out of state patients who can not travel here for the 1 year visit, we can arrange local follow up with a complete 4 part evaluation as follows:

- ✓ Computer based questions
- ✓ Brief narrative of your progress
- ✓ X-ray: AP of the pelvis and a frog lateral of your hip digitized on a CD
- ✓ Physical therapy exam

This information is available on our website

15. Bone Health:

Even if you have good bone quality it is a smart general health policy to consume 1500mg of calcium and 1000 IU of vitamin D plus a multivitamin daily. If you have poor bone quality with a DEXA scan less than -1.5 please read more detailed information under bone health under ***current topics*** on our website.

Do not hesitate to contact us for any reason, Dr. Gross and Lee Webb

Dear _____,

- **I am writing to request that you obtain blood testing for metal ions as a part of your routine follow-up of your hip**
- **A prescription is enclosed for Cobalt, Chromium, and Titanium levels.**
- **The test must be done at a Quest laboratory. This is a national lab with branches throughout the US. Please check the Internet for a location near you.**
- **You must avoid vitamins and other supplements for one week prior to testing.**

Recent scientific data suggests that this is a good method of evaluating metal bearing implants for wear. Enough evidence now exists for us to begin using blood levels for metal ions to monitor patients for implant wear problems. If we do discover elevated levels, I advocate closer follow-up and further evaluation.

All artificial implants wear at the bearing surface. If the bearing is metal-on-metal, this wear debris is cobalt and chromium. It usually gets absorbed by the body and transported to the kidney where it is removed from the body. In rare cases there is a higher than expected wear rate and these wear particles accumulate in the local tissues around the hip. If the load of particles gets too high, a local inflammation can result. If levels in the blood are high, this may indicate that the local tissues are overloaded. Therefore, measuring the blood levels is a good way to screen patients for high wear and possible local tissue reaction in the hip.

I have personally performed over 3000 metal bearing hip resurfacings/ replacements in the last 10 years. I have only twice had to revise implants for this wear problem. The overall failure rate has been very low and other types of failures like fracture or loosening are far more common. Furthermore, in all revisions that I have performed for loosening of the cemented femoral resurfacing component, I have never come across a case of accelerated wear at the time of surgery. Furthermore, about 300,000 total knee replacements are done in the US yearly and research has shown that similar ion levels are measured with these implants as in hip resurfacings. Total Knee replacements have been performed in much higher numbers and for many more years than hip resurfacings. We therefore know that typical ion levels are well tolerated by most people.

Nevertheless, I have become convinced that closer monitoring with metal levels is desirable. I suggest that we obtain levels beginning at 2 years post surgery and then repeat them every other year at the time of your routine follow-up. If you come to see me in the office, I suggest that you have the levels drawn 2-4 weeks in advance so that the results are available for our visit. If your surgery was done over 2 years ago, anytime is a good time to get the first level. We should then recheck at the time of your every other year routine follow-up dates.

A prescription can be downloaded from my website. It is very important that the same laboratory always does these levels, because the results vary widely between labs. I have chosen Quest Laboratories, because they have a nationwide presence and have a good reputation. You should look up Quest labs online and make **sure** that your levels are done at one of their facilities or at a facility that sends their labs to Quest. If labs are drawn at Providence Northeast Hospital in Columbia, they are sent to Quest. Quest is specifically listed on my prescription as well to serve as a reminder. If your levels are done at any other lab, the results may not be comparable to the rest in my database.

It is important that you avoid taking vitamin or mineral supplements for at least 1 week before testing. Many of these supplements contain chromium and can lead to false reports on the blood tests.

Any joint implants that contain cobalt-chrome metal can raise your levels. This includes total knees, total hips, resurfacings, and total shoulders.

I recommend routine follow-up for all patients with joint replacements even if they are doing well. I constantly make an effort to contact patients and try to remind them that follow-up is important. It is particularly important to monitor new technology regularly. My currently recommended follow-up intervals are at 6 weeks, 1 year, 2 years, and every other year thereafter. The first two visits are best done at my office in person. After that time, remote follow-up is adequate. Of course, you are always welcome to come see me at any time!

At 2 years and beyond, information on how to complete remote follow-up is on my website. The following items are now recommended at each evaluation:

- 1. Standing AP pelvis XR labeled "standing" (We prefer a digital DICOM image on a disc).**
- 2. Questionnaire filled out online. Directions on my website.**
- 3. Blood test: metal ion levels Cobalt, Chromium, and Titanium. A prescription is available on my website.**

If you have only one implant in your body, and the cobalt and Chromium levels are below 10ug /L each, we will just continue routine monitoring. If the levels are higher, further evaluation may be advised. If we receive your levels, I will send you a note that the levels are in the expected range, or I will contact you within 2 weeks of receiving the test results. If you don't hear from us, we have not received your test results. Please contact our office or the lab and be sure that the levels get to us.

There will be no charge for reviewing your XR, questionnaire, and metal ion levels and sending you a notification. I would like to continue to monitor your results at routine intervals to be sure that you are doing well. If you have had revision surgery, I want to know about it. If you are having a problem, I would like to help you resolve it, if possible. Please keep in touch.

With best Regards,

Thomas P. Gross, MD
www.Grossortho.com
803.256.4107

MIDLANDS

orthopaedics, p.a.

(803) 256-4107
1910 Blanding St.
Columbia, SC 29201
1013 Lake Murray Blvd.
Irmo, SC 29063

FOR _____

Rx ADDRESS _____ DATE _____

Blood test for Metal Ion Levels: Cobalt, Blood
Chromium, Blood
Titanium, Blood

**STOP TAKING VITAMINS AND MINERAL SUPPLEMENTS 1 WEEK
PRIOR TO TEST**

Have test performed at QUEST laboratories (national lab, find local office
near you online please).

Diagnosis: OA hip 715.35

Thomas P. Gross M.D

Please FAX to: 803-933-6339 and give the patient a copy.

If you can't find a lab for metal ion tests from the following address, you can locate a lab from the link by yourself as well:
http://www.questdiagnostics.com/hcp/psc/jsp/hcp_psc_index.jsp#bottom

NAME	ADDRESS	CITY	STATE	ZIP	PHONE
Quest Diagnostics- Myrtle Beach	909 Medical Cir	Myrtle Beach	SC	29572	866-697-8378
Quest Diagnostics - Aiken	156 University Pkwy Ste 100	Aiken	SC	29801	866-697-8378
Quest Diagnostics- Bluffton	25 Sherington Dr. Ste B	Bluffton	SC	29910	866-697-8378
Quest Diagnostics - Charleston-West Ashley	1470 Tobias Gadson Blvd Suite 101	Charleston	SC	29407	866-697-8378
Quest Diagnostics- James Island	418 Foly Road Sutie C	Charleston	SC	29412	866-697-8378
Quest Diagnostics - Columbia	3010 Farrow Rd Ste 110	Columbia	SC	29203	866-697-8378
Baptist Easley Hospital - Specimen Collection Agreement	200 Fleetwood Dr	Easley	SC	29640	864-442-7694
Quest Diagnostics - Greenville	1003 Grove Rd Suite A	Greenville	SC	29605	866-697-8378
Quest Diagnostics - Greenwood	105 Vine Crest Court Suite 1300	Greenwood	SC	29646	866-697-8378
Quest Diagnostics- Hilton Head-Heritage	460 William Hilton Pkwy	Hilton Head Island	SC	29926	866-697-8378
Marion County Medical Center - Third Party Specimen Collection	2829 E Highway 76	Mullins	SC	29574	843-431-2550
Newberry County Memorial Hospital - Purchased Service	2669 Kinard St	Newberry	SC	29108	803-276-7570
Quick Draws - Third Party Collection Site	10135d Clemson Blvd	Seneca	SC	29678	864-888-0027
Quest Diagnostics - Summerville	104 Morgan Pl Ste C	Summerville	SC	29485	866-697-8378

Quest Diagnostics - Asheville	41 Oakland Rd Ste 150	Asheville	NC	28801	866-697-8378
Quest Diagnostics - Charlotte-University	10320 Mallard Creek Rd Ste 290	Charlotte	NC	28262	866-697-8378
Quest Diagnostics- Fayetteville	3186 Village Dr Ste 202	Fayetteville	NC	28304	866-697-8378
Caldwell Memorial Hospital - Specimen Collection Agreement	321 Mulberry St SW	Lenoir	NC	28645	828-757-5256
Clinical Laboratory Service - Third Party Collection Site	102 Lincoln Medical Park	Lincolnton	NC	28092	704-732-1752
Lake Norman Regional Medical Center - Third Party Specimen Collection	171 Fairview Rd	Mooresville	NC	28117	704-527-4968
Medac 1- Third party Collection	4402 Shipyard Blvd	Wilmington	NC	28403	910-791-0075
Medac II - Third Party Collection Site	1142 Military Cutoff rd	Wilmington	NC	28405	910-256-6088
Medac III - Third Party Collection Site	8115 Market St	Wilmington	NC	28411	910-686-1972
Quest Diagnostics- Athens	1000 Hawthorne Ave Ste Q	Athens	GA	30606	866-697-8378
Quest Diagnostics - Augusta	1109 Medical Center Drive Suite 2A	Augusta	GA	30909	866-697-8378
Evans Memorial Hosptial	200 N River St	Claxton	GA	30417	912-739-5110
Eatonton Medical and Surgical Center	132 sparta Highway	Eatonton	GA	31024	706-485-8495
Candler Hosptia- Rapid Response Testing and Specimen	5353 Reynolds St	Savannah	GA	31405	912-819-7250
East Georgia Regional Medical Center- PSA	1499 Fair Rd	Statesboro	GA	30458	912-486-1610
McDuffie Regional Medical Center - Third Party Specimen Collection	521 Hill Street, Southwest	Thomson	GA	30824	706-597-5287
Vidalia Lab Services, Inc- Specimen Collection Agreement	1802 Teston Ln	Vidalia	GA	30474	912-537-0622