

Lateral Retinacular Release: A Survey of the International Patellofemoral Study Group

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Purpose: The purpose of this investigation was to determine current views regarding lateral release among experienced knee surgeons with a specific interest in the patellofemoral joint. **Type of Study:** Scientific survey. **Methods:** A questionnaire was developed and mailed to all members of an international group with a specific interest in disorders of the patellofemoral joint. Frequencies and percentages of responses were calculated for each question to determine surgeon consensus. We measured agreement among responses using the kappa statistic. This provided an indication of consistency for each question as well as correlation among the responses to different questions. **Results:** The survey response rate was 60%. Isolated lateral release was estimated to account for only 1 to 5 surgical cases per respondent per year, or 2% of cases performed annually. In the setting of arthroscopy or exploration, 74% of respondents believed that lateral release calls for specific informed consent. Strong consensus was found that objective evidence is needed to justify lateral release, but agreement was poor as to what clinical evidence provides the most appropriate indication for the procedure. **Conclusions:** Even among experienced knee surgeons with a special interest in diseases of the patellofemoral articulation, isolated lateral release is rarely performed. Strong consensus was found that isolated lateral release should not be undertaken without prior planning in the form of objective clinical indications and preoperative informed consent. **Level of Evidence:** Level V. **Key Words:** Lateral release—Survey—Patella—Knee pain—Indications.

The first case of lateral retinacular release in the English-language literature was reported by Polard in 1891.¹ However, isolated lateral release did not come into wide usage until it was reintroduced by Merchant and Mercer² and Ficat et al.³ and endorsed by Metcalf.⁴ Its popularity grew throughout the 1970s and 1980s as a relatively expedient addition to arthroscopy in cases of patellofemoral pain or instability.

Lateral retinacular release has been scrutinized increasingly during the past decade because of concerns about possible untoward effects on the extensor mechanism. Reports of complications such as postoperative hemarthrosis and unpredictable outcomes such as medial patellar instability have been published.⁵⁻⁸ Furthermore, recent evidence has given us a better understanding of the effect of the lateral retinaculum on patellar motion limits.^{6,9,10} Despite these concerns, the American Board of Orthopaedic Surgery (ABOS) statistics showed that lateral release ranked 47th among all procedures reported by candidates for part 2 (oral) examination in 2000.¹¹

The purpose of this investigation was to determine current views among experienced knee surgeons with a specific interest in the patellofemoral joint. Specifically, we wished to determine what consensus exists and to establish discussion points and controversies in need of further study.

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METHODS

Respondent Sample

To become a member of the patellofemoral study group, candidates must have been in practice for at least 5 years after completing training, and they must have shown ongoing interest in the knee extensor mechanism during this time, either by research, speaking at symposia or courses, or devoting a large proportion of practices to the treatment of individuals with knee extensor mechanism complaints. To remain in the group, they must remain actively involved in studying extensor disorders or otherwise contribute to the discussions and activities of the group. Therefore, International Patellofemoral Study Group (IPSG) members represent a sample of orthopaedic surgeons who have focused considerably more time and energy to the study and treatment of knee extensor mechanism disorders than would be expected in the general population of orthopaedic surgeons. For these reasons, they represent a population of opinion leaders on subjects pertaining to the knee extensor mechanism.

Questionnaire Development and Administration

Member and nonmember attendees at a formal session of the IPSG at Garmisch-Partenkirchen, Germany, in October 2000 developed initial survey items. The study authors subsequently refined and focused the initial items to develop the survey displayed in Table 1.

The survey was sent to all IPSG members by mail, fax, and e-mail. Members who did not respond initially were contacted again by e-mail and fax. A total of 27 (60%) of 45 members responded. The primary author was excluded from participation in the survey to eliminate bias in the analysis of results. All individual identities of respondents were removed before data entry.

Statistical Analysis

Individual responses for each question were recorded. Frequencies and percentage of responses were calculated for each question. We measured agreement among responses using the kappa statistic. This provided an indication of consistency as well as correlation among the answers to different questions. We applied Fisher exact tests to compare responses of surgeons who use arthroscopic versus open or mini-open techniques in lateral retinacular release. The

level of statistical significance was set at $P = .05$ for this study.

RESULTS

Table 1 displays the responses to each questionnaire item. Fig 1 shows the distribution of knee surgery volume among respondents per year. Median total surgical volume per year was approximately 300 cases per surgeon. The median number of lateral releases reported was 1 to 5 per year per surgeon (Fig 2), which corresponds to fewer than 2% of cases performed annually. Only 11% stated that they never perform isolated lateral release (Fig 3). Only 15% of respondents reported performing more than 10 isolated lateral releases per year, despite a focused patellofemoral practice. The majority of respondents stated that they prefer to use an open or mini-open technique (59%) for lateral retinacular release.

Fewer than 20% consider patellar subluxation or dislocation appropriate indications for lateral release. Systemic hypermobility is a contraindication to lateral release, by strong consensus (70%). Only 15% of respondents would perform lateral release on the basis of history alone. However, no consensus was found with respect to findings on work-up that would be necessary to justify lateral release. Of the options for "necessary findings to support lateral release," lateral tilt by examination (52%) and reduced medial excursion (37%) were the most frequent options selected by survey respondents.

Fig 4 presents settings that respondents identified as requiring informed consent. Most respondents (74%) stated that lateral release requires specific informed consent when performed as an isolated or primary procedure in conjunction with arthroscopy or exploration. Tubercle osteotomy and patellar stabilization, conversely, were believed by respondents to be settings in which separate informed consent for lateral release is not required. In these 2 situations, lateral release was believed to be within the general scope of the procedure, not requiring specific informed consent (kappa = 0.76; $P < .001$).

In the setting of recurrent patellar dislocation, the value of the Q angle did not change the response. Those who believed elevated Q angle was not a contraindication also believed patella infera was not a contraindication (kappa = 0.70; $P < .001$). All responses to questions about arthritis were consistent (kappas = 0.60 to 0.75; $P < .001$). Similarly, responses to subluxation on static axial imaging and

TABLE 1. Questionnaire and Item Responses

| | No. | % |
|--|-----|-----|
| 1. For which clinical scenarios would you consider lateral retinacular release? (N = 27) | | |
| Traumatic anterior knee pain without instability after 1 year of ideal nonoperative treatment | 10 | 37% |
| Traumatic anterior knee pain from blunt anterior knee trauma without instability after 1 year ideal nonoperative treatment | 6 | 22% |
| Recurrent lateral patellar dislocation with tight lateral retinaculum | 5 | 19% |
| Episodic symptomatic lateral patellar subluxation but not patellar dislocation | 3 | 11% |
| First-time lateral patellar dislocation with tight lateral retinaculum | 2 | 7% |
| Recurrent lateral patellar dislocation with a normal Q angle | 2 | 7% |
| Recurrent lateral patellar dislocation with any Q angle | 1 | 4% |
| 2. Which are contraindications for lateral release? (N = 27) | | |
| Systemic hypermobility | 19 | 70% |
| Patella alta | 11 | 41% |
| History of lateral patellar dislocation | 10 | 37% |
| Systemic arthritis | 10 | 37% |
| Patellofemoral arthrosis with joint space narrowing and sclerosis on plain axial patellofemoral images | 9 | 33% |
| Excessive Q angle | 8 | 30% |
| Cartilage degeneration greater than outerbridge grade by 2 arthroscopy | 7 | 26% |
| Patella Infera | 5 | 19% |
| Other | 1 | 4% |
| 3. If a patient has recalcitrant anterior knee pain, no history of patellar instability, failed activity modification, and physical therapy, what findings must be present to be candidate for lateral release? (N = 27) | | |
| Lateral patellar tilt by physical examination | 14 | 52% |
| Pathologic lateral patellar tilt measured from CT or MRI axial images | 12 | 44% |
| Reduced medial patellar excursion | 10 | 37% |
| Pathologic lateral patellar tilt measured from plain radiographs | 8 | 30% |
| Outerbridge grade 2 or less cartilage lesions on arthroscopy | 4 | 15% |
| None of these. Make decision based on history as described in the question | 4 | 15% |
| No patellofemoral arthrosis on plain radiographs | 3 | 11% |
| Pathologic lateral patellar subluxation (lateral position) on CT or MRI images | 3 | 11% |
| Other | 2 | 7% |
| A positive apprehension sign on physical examination (Fairbank's sign) | 1 | 4% |
| Pathologic lateral patellar subluxation (lateral position) on axial radiographs | 1 | 4% |
| Systematic hypermobility | 0 | 0% |
| Patella alta | 0 | 0% |
| Patella infera | 0 | 0% |
| 4. Number of patients per year you perform lateral release on (N = 27) | | |
| 0 | 6 | 22% |
| 1-5 | 12 | 44% |
| 6-10 | 5 | 19% |
| >10 | 4 | 15% |
| 5. Number of knee surgeries performed each year (N = 27) | | |
| <100 | 0 | 0% |
| 101-150 | 4 | 15% |
| 151-200 | 4 | 15% |
| 201-250 | 2 | 7% |
| 251-300 | 5 | 19% |
| >300 | 12 | 44% |
| 6. Is anterior knee pain a distinct clinical entity with specific etiology? (N = 25) | | |
| Yes | 5 | 20% |
| No | 20 | 80% |
| 7. Do you obtain informed consent from the patient before performing lateral release? (N = 27) | | |
| Yes | 18 | 67% |
| No | 9 | 33% |
| 8. Is necessary to obtain informed consent before lateral release when it is done in any of the following settings? (N = 27) | | |
| During arthroscopy | 20 | 74% |
| During reconstructive surgery for recurrent lateral patellar dislocation | 10 | 37% |
| During tibial tubercle osteotomy (Fulkerson or Maquet type) | 9 | 33% |
| During total knee replacement | 2 | 7% |
| 9. Do you perform lateral release? (N = 27) | | |
| As a primary surgery or secondary surgery | 19 | 70% |
| As a secondary procedure only for example during TKR or realignment surgery | 6 | 22% |
| I never perform lateral release for any reason | 3 | 11% |
| 10. Lateral release works by: (N = 27) | | |
| Reducing soft tissue tension in the retinaculum | 21 | 78% |
| Denervating the patella | 14 | 52% |
| Reducing pressure in the patella or femur | 10 | 37% |
| Don't know | 7 | 26% |
| Other | 1 | 4% |
| 11. Which is your preferred technique for isolated lateral release (N = 27) | | |
| Open or mini-open | 16 | 59% |
| Arthroscopic | 9 | 33% |
| Both | 1 | 4% |
| Neither | 1 | 4% |

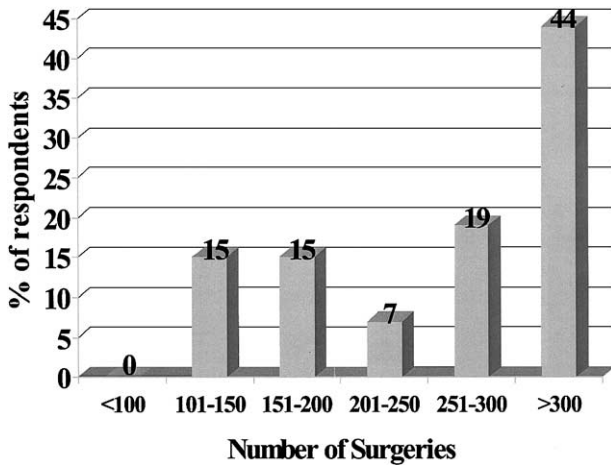


FIGURE 1. Number of knee surgeries performed each year.

physical findings associated with instability were consistent across items ($\kappa = 1.0$; $P < .001$).

Fig 5 presents possible mechanisms by which lateral release relieves pain. Strong consensus was found (78%) that lateral release works by relieving tension in a tight lateral retinaculum. Fewer respondents believed that lateral release works by denervating painful tissues (52%) or reducing articular pressure (37%).

Comparisons of respondents who preferred arthroscopic versus open or mini-open techniques indicated a significant difference in the proportion of respondents who considered hypermobility a contraindication for lateral release. In the arthroscopic subgroup, 100% considered this a contraindication for lateral

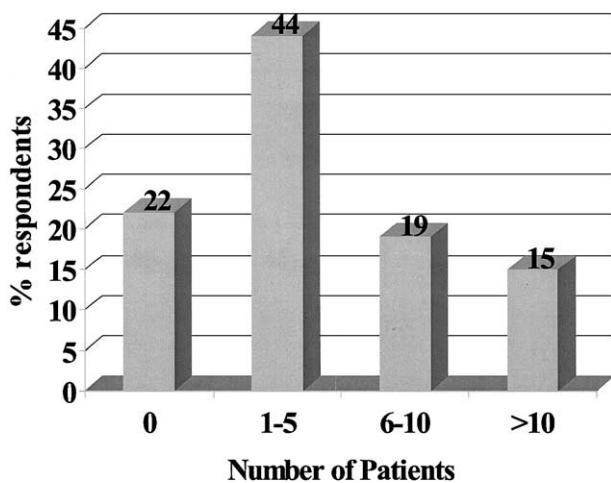


FIGURE 2. Number of lateral release surgeries performed each year.

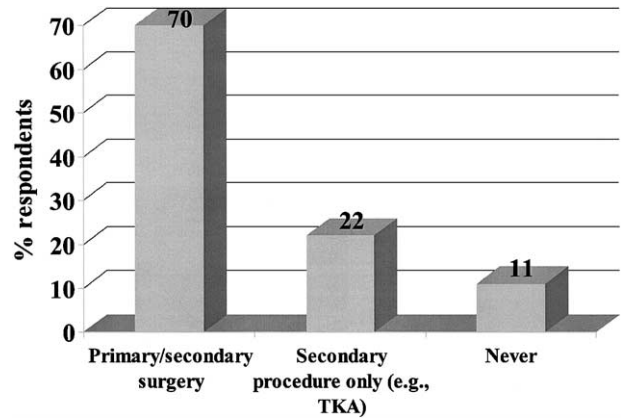


FIGURE 3. Situations in which lateral release is performed.

release in comparison to 50% within the open and mini-open subgroup ($P < .05$). Among the 53 individual items in this survey, no other responses differed significantly between surgeons who use arthroscopic versus open techniques for performing lateral release. In fact, the one positive finding mentioned above was probably because of chance alone.

Interestingly, the technique of release did not appear to be related to whether additional consent was needed to perform lateral release during routine arthroscopy. Sixty-nine percent of surgeons who use open or mini-open techniques for lateral release believed separate consent was needed to perform lateral release during routine arthroscopy, whereas 78% of those who perform arthroscopic lateral release believed separate consent was needed. The small sample size of this study may not have allowed adequate power for comparisons of these subgroups, but in general the differences in responses were small in relation to the technique used for lateral release.

DISCUSSION

Lateral release has been recommended for a number of specific conditions over the years. These conditions include recurrent lateral patellar dislocations or subluxations,^{1,2,4} or chronic lateral subluxation (fixed lateral position).¹² Lateral release has also been advocated for management of pain cause by excessive lateral pressure syndrome (ELPS),^{3,13} lateral retinacular tightness,^{12,14} or retinacular neuromata.^{15,16} ABOS statistics indicate that isolated lateral release is among the more common procedures reported in case lists of candidates for the oral board examination.¹¹

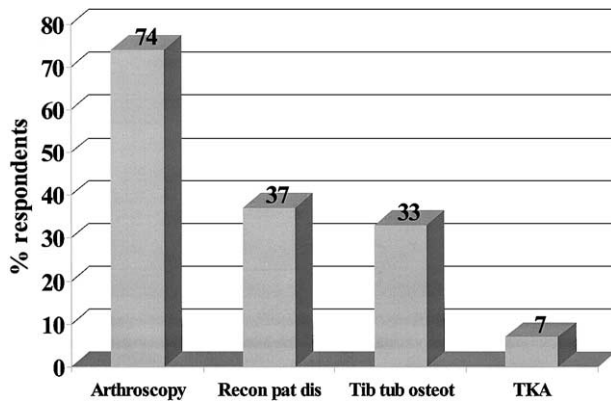


FIGURE 4. Procedures requiring informed consent for lateral release.

However, controversy exists about the potential risks and benefits of isolated lateral release. At a recent meeting of the IPSPG, the subject of lateral release was discussed in an effort to construct a questionnaire for a survey that could define current thinking about the procedure, what mechanical effects it is perceived to have among experts in extensor mechanism disorders, indications, techniques, and the volume of lateral releases performed. At a follow-up meeting, initial survey items were refined to determine areas of consensus and controversy. Although we understand that this quasiscientific method has significant limitations, we believe it is useful to establish whether a standard exists within this group of experts on an increasingly controversial topic among knee surgeons.

Limited clinical evidence has suggested that lateral release may be helpful for a small number of specific conditions, including tight lateral retinaculum evidenced by tilt or subluxation on computed tomography or on plain radiographs^{14,17} or by reduced medial patellar passive displacement.⁶ Ficat et al.^{3,18} reported good results after lateral release for isolated painful lateral patellar or trochlear defects documented by arthrograms in the axial projection. Other clinical studies have shown that lateral release is not helpful in the setting of patellofemoral arthrosis,⁵ or in patients with normal or excessive medial patellar mobility.⁶ In short, clinical evidence exists that lateral release may control pain by reducing lateral retinacular tension and lateral articular pressure, but only if tension and pressure are elevated preoperatively.

As with any other soft tissue release, lateral release may be expected to yield specific reductions of patel-

lar constraint (rotation and translation). In biomechanical studies, lateral release has been shown to (1) reduce lateral tilt in cases in which tight lateral retinaculum is seen on computed tomographic scan images,¹² (2) increase passive medial displacement,^{10,19} and (3) increase passive lateral displacement.⁹ In cadaver knees without pre-existing lateral retinacular tightness, lateral release had no effect on articular pressures when the quadriceps were loaded.²⁰

In this survey of experienced knee surgeons with a dedicated interest in the treatment of extensor mechanism disorders, most respondents (89%) indicated that isolated lateral release is a legitimate treatment, but only on rare occasions (1% to 2% of surgeries performed, < 5 lateral releases per year). Strong consensus (78%) exists that objective evidence should show lateral retinacular tension if a lateral release is to be performed. However, little agreement exists as to what physical or imaging evidence provides the best indication for lateral release. Strong consensus (74%) exists that unless it is part of major reconstructive surgery, such as patellofemoral realignment or total knee arthroplasty, lateral release requires informed consent. This response was not related to whether the respondent preferred arthroscopic or open techniques of release. The need for objective evidence and the recommendation of specific informed consent both argue strongly against the performance of lateral release as an "incidental" adjunctive procedure during knee arthroscopy.

As with any survey methodology, this study has limitations. Although 50% is considered an adequate sample size for survey research,²¹ the initial population of interest for this study consisted of 45 surgeons, and our survey response rate of 60% resulted in a

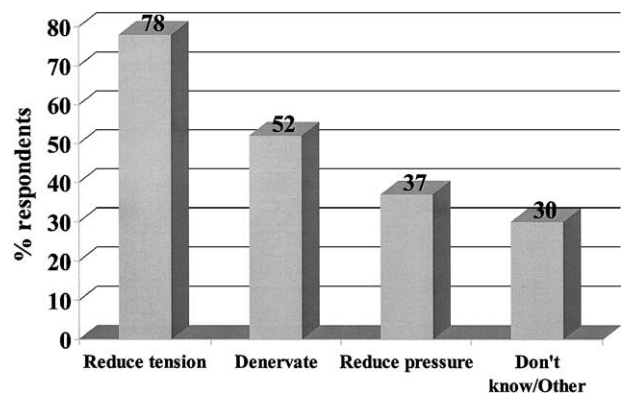


FIGURE 5. Mechanism by which lateral release relieves pain.

small sample size with limited power ($N = 27$). In addition, we were unable to determine if a non-response bias existed, with survey respondents differing from nonrespondents.

This study was not designed to answer a specific hypothesis but to determine where consensus exists among surgeons with a special interest in the patellofemoral joint. The infrequent use of lateral release by survey respondents was unexpected. Comparison with ABOS statistics suggests that experienced knee surgeons perform lateral release more sparingly than the population of young surgeons applying to Part 2 of the board tests. Further research is necessary to compare the opinions of surgeons acknowledged to be experts in knee extensor mechanism surgery versus opinions of surgeons with different specialization within knee surgery, with control for years of experience and percentage of a given surgeon's practice representing arthroscopic versus open surgery.

CONCLUSIONS

The results of this survey emphasize the following current views held by experienced knee surgeons with a special interest in the patellofemoral joint:

Isolated lateral release is believed to be indicated only in rare circumstances.

The majority of respondents believe that its mechanism of action is the relief of tension in tight lateral retinacular tissues.

Strong agreement was found that lateral release should not be performed without specific physical evidence of tight lateral tissues, but at this time little agreement exists on what physical evidence offers the best indication for lateral release.

In the setting of diagnostic or exploratory arthroscopy, lateral release should not be performed without first obtaining informed consent from the patient.

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