Patellar dislocation - an algorithm for management within primary care

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ABSTRACT

Background

Patellar dislocation is a common condition which may present to primary care. The literature available on this condition discusses evaluation, assessment of risk factors for recurrence, and non-surgical versus surgical management. Literature detailing its management specifically within primary care is lacking.

Objectives

The purpose of this review paper is to review and discuss the steps in evaluation and management of this condition and formulate an algorithm summary particular to a primary care setting.

Method

A database search was carried out using specific keywords and terms. The authors' initial selection of 12 articles were subsequently reduced to 8 after review of their relevance to a primary care setting, and these were subjected to in-depth analysis. The information gathered was detailed and discussed, and a subsequent algorithm was formulated.

Results

Patellar dislocation is a common injury, which may have long-lasting consequences to knee stability if not initially managed appropriately. There is inconclusive evidence to favour a surgical versus non-surgical approach. Evaluation of an individual's risk factors and whether referral to secondary care is required are crucial steps in management of this condition.

Conclusion

Primary care physicians may play a key role in appropriate management of an individual's first presentation of patellar dislocation, as well as assessment on the need for secondary care referral. The algorithm proposed by the authors may assist primary care physicians in improving management of patellar dislocation within a primary care context.

Key Words

Patellar dislocation, management, risk factors, algorithm, primary care.

INTRODUCTION

Background

Patellar dislocation is defined as the relocation of the patella from its anatomical position to another position (Smith, et al., 2015; Wolfe, et al., 2018). The most common abnormal movement is in a lateral direction (Tsai, et al., 2012). A primary patellar dislocation is one that occurs in a previously uninjured knee, and a traumatic patellar dislocation is one where the dislocation is secondary to trauma. The mechanism of injury is typically a knee moving in flexion and valgus, and this commonly happens during a sporting activity (Duthon, 2015). This type of injury represents 3% of knee injuries and is more common in young age groups (10-17 years of age) and females (Fithian, et al., 2004; Wolfe, et al., 2018).

Patellar dislocation may cause significant damage to the structures of the knee which provide stability. One of these is the medial patellofemoral ligament, a structure located

between the superomedial edge of the patella, and the medial epicondyle and adductor tubercle of the femur (Duthon, 2015). Numerous studies of patients who underwent surgical intervention comment that damage to this structure is a risk factor for recurrence of patellar dislocation (Bitar, et al., 2012). Therefore, the appropriate management of the first primary patellar dislocation is essential in identifying and preventing any risk factors for the recurrence of patellar dislocation.

There is still some debate on whether primary patellar dislocations should be managed surgically or not. Some studies favour non-surgical management for primary patellar dislocations, if other risk factors have not been identified, while others favour a specialist review to consider surgical management. Most studies however do agree on the identification of risk factors to aid in the decision (Smith, et al., 2015; Wolfe, et al., 2018; Yang, et al., 2019). Long-term consequences of patellar dislocation include recurrent dislocation, chronic pain, joint instability, and cartilaginous injury (Lord, et al., 2020).

Objectives

The purpose of this paper is to review the current literature and general guidelines on the evaluation of a case of patellar dislocation, highlighting:

- those risk factors key in identifying patients who may require secondary referral and those at risk of recurrence,
- initial examination and investigation and
- management, with specific reference to what may be done by a primary care physician.

METHOD

A search was carried out on PubMed and Google Scholar databases for articles using the following keywords and terms: 'patellar dislocation', 'management', 'surgical vs non-surgical', and 'primary care'. The initial search included articles dated between 2016 and 2020, however this only yielded 3 articles which the authors considered relevant for their review based on their applicability to primary care and in-depth discussion of initial assessment and management. The search was therefore extended to include articles published between 2001 and 2020. A total of 12 articles were selected after initial review by the authors for more in-depth analysis, and a final number of 9 were utilised for this review paper, once again considering mainly their relevance to a primary care setting. The information gathered was amalgamated and summarised, in tandem with the formulation of an algorithm which may be followed by any physician.

RESULTS

When patients present with a clear patellar dislocation, the attending physician is advised to follow the steps of history-taking, relevant examination, decision-making supported by imaging studies, and initial management. Long-term management is to be considered at all stages.

History

The history should be taken to ascertain the activity being performed at the time of injury as well as the mechanism of injury. The pre-injury activity level should be determined, accompanied by an inquiry about whether the injury is a first presentation and whether a family history of patellar instability exists (Fithian, et al., 2004; Jain, et al., 2011; Wolfe, et al., 2018). This allows the clinician to determine an individual's predisposition to patellar instability which is relevant in long-term management, especially as a personal history of previous dislocations, and a family history of said injuries, are two of the strongest predictors of recurrence (Jain, et al., 2011; Tsai, et al., 2012).

Examination

Most often the patient will be in pain, even if the patella has relocated spontaneously, and an effusion or hemiarthrosis (large or small) may be noted upon initial inspection (Jain, et al., 2011; Duthon, 2015). Hence it may be advisable to administer some analgesia prior to examination (Duthon, 2015). The position of the patella should be determined: is it still dislocated, or has it relocated spontaneously (Jain, et al., 2011)? The patient may describe a

sensation of the knee "slipping", particularly if they have a large knee effusion. Some traumatic patellar dislocations may produce a significant hemarthrosis; aspiration is to be considered for relief if the patient is significantly in pain or movement is significantly limited (Duthon, 2015; Wolfe, et al., 2018). The examination of the knee should be done with care but in full, to ascertain if any other injuries are present, such as meniscal injuries, ligament injuries or fractures (Jain, et al., 2011). Large hemarthrosis may raise the clinical suspicion of fractures, and so the importance of imaging should be highlighted in further evaluation (Duthon, 2015).

Imaging

All studies recommend initial evaluation with a plain X-ray (Fithian, et al., 2004; Tsai, et al., 2012; Duthon, 2015). Views should include an anterior-posterior view, lateral views, and Merchant views – these allow a superior-inferior projection of the patella. A combination of all these views allows for proper evaluation of the patella position but also of the presence of osteochondral fractures, including fragments. If osteochondral fractures or fragments are seen or suspected, surgical management of the dislocation should be considered. It is therefore recommended that these patients be referred for further imaging. Both Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) scanning have been studied for evaluation of the injury (Fithian, et al., 2004; Tsai, et al., 2012; Duthon, 2015). CT scan allows for quick evaluation of the presence of fractures or fragments. The decision of conservative versus surgical management may therefore be taken more promptly. Despite this, if any complicated injury is suspected, fractures or fragments are difficult to visualise, and if the decision of conservative versus surgical management requires further evaluation of the anatomy / injury to the knee, an MRI is the imaging modality of choice.

Management

When treating patellar discolorations within primary care, the discussion of any case that is not clear-cut with an orthopaedic specialist is highly recommended. If the case is however a first patellar dislocation with no risk factors for future dislocation, and fractures and fragments have been confirmed absent on X-ray imaging, the conservative management may begin within a primary care setting.

The knee should be extended and fixed in an extended position with a knee immobiliser or brace. The flexion of the brace should be limited to 20 degrees (Duthon, 2015). The knee immobiliser should be kept on by the patient for at least 3 weeks (Duthon, 2015), although some studies have recommended an immobiliser up to 6 weeks (Fithian, et al., 2004). From the initiation of treatment, the patient should be referred to physiotherapy and rehabilitation to ensure the patient's maintenance of good balance and range of motion, and to strengthen the quadriceps. A delay in this side of management has demonstrated in some studies an increased recurrence rate of dislocation (Smith, et al., 2015). If a significant effusion or hemarthrosis is noted, prior to application of the brace, this may be aspirated for further relief. A follow-up of the patient's condition is always recommended, particularly if pain or swelling persists after the initial treatment period. Patients with persistence of instability or pain symptoms may eventually require surgical intervention (Fithian, et al., 2004; Tsai, et al., 2012; Duthon, 2015).

An algorithm was created by the authors to assist general practitioners (GPs) in navigating this process (see Figure 1).

DISCUSSION

Physicians working within a primary care setting may carry out all the described steps in the results section, apart from CT and MRI scanning. There are numerous recommendations surrounding imaging and management, but this review paper reveals that most recommendations between different sources are similar. None of the articles specifically denote the procedure of access to imaging such as CT or MRI from a primary care setting, which in a local setting requires referral to emergency specialist services within the public sector of healthcare; the articles simply refer to scenarios when imaging should be considered and what type of imaging to consider (Jain, et al., 2011; Wolfe, et al., 2018).

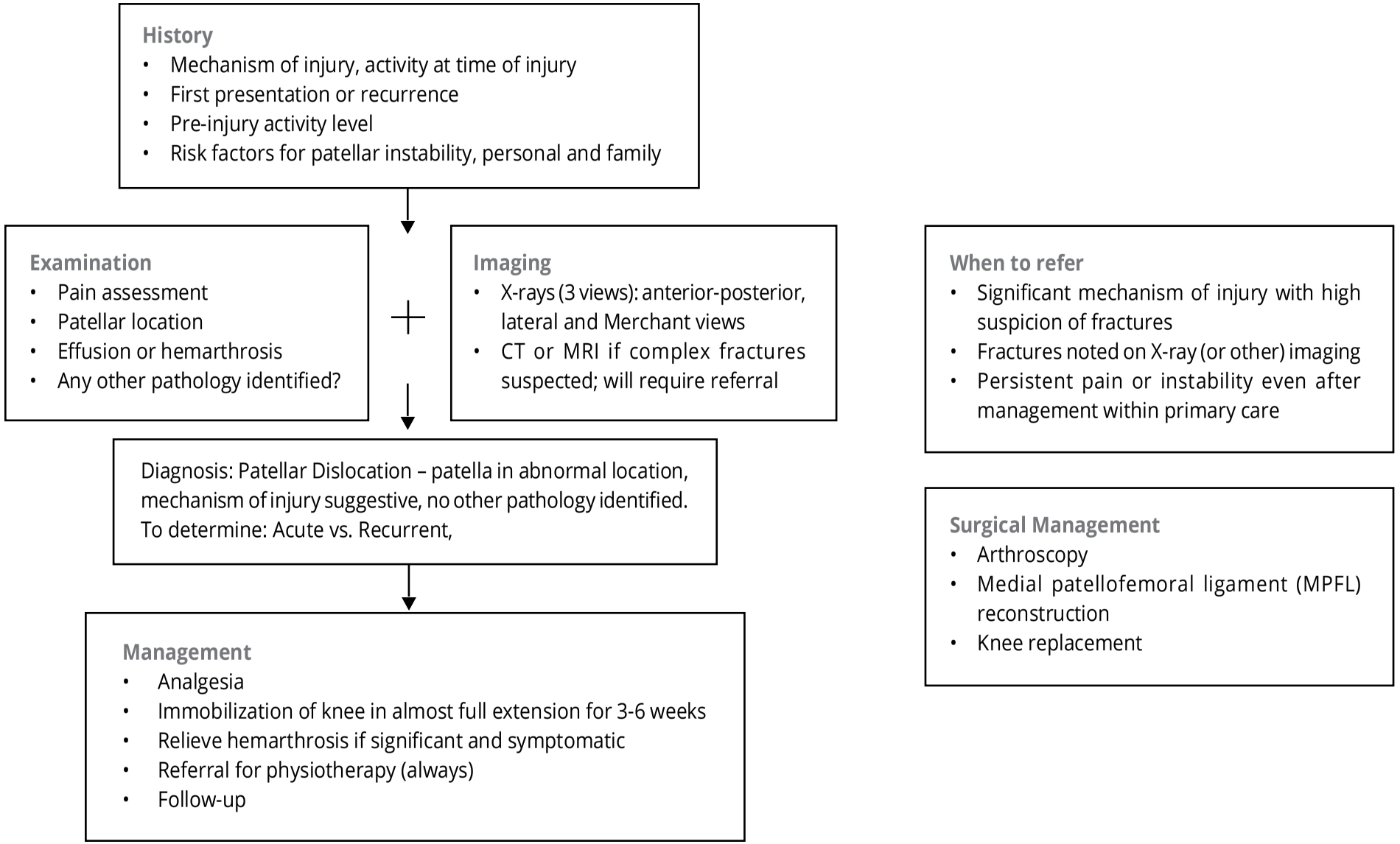

Figure 1: Algorithm for the management of patellar dislocation within primary care.

If patients fall into the category of surgical management, they should be referred to the appropriate specialists, who may decide on an arthroscopy as an initial surgical procedure but may also consider significant repair surgery should this be recurrent or if trauma with fractures and fragments is identified. This could include repair of tendons or ligaments and/or tightening of structures to improve stability (Duthon, 2015).

Limitation

As already highlighted, the sparse availability of review papers targeted toward primary care is a limitation of this article.

CONCLUSION

The above constitutes a review of some of the literature from the past two decades on the management of patellar dislocations. Focus on primary care management of this condition is lacking in literature. The studies included also recommend the continued research into the comparison of surgical and non-surgical management of patellar dislocations.

It is proposed that the primary care role in the management of this condition should include:

- a detailed and specific history of the injury and risk factors for knee instability;
- an examination of the knee to confirm the diagnosis of dislocation and ascertain any other possible pathologies;
- requesting of appropriate X-ray imaging (including all recommended views) for proper evaluation on the state of the knee, and whether other pathologies occur concomitantly;
- decision-making, including discussion with the patient, on whether conservative or surgical management is required (which may include discussion of the case with an orthopaedic specialist);
- appropriate referral if indicated to secondary care; and
- referral of the patient to physiotherapy for early rehabilitation.

An algorithm, created by the authors, is provided (Figure 1) to aid in this process.

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