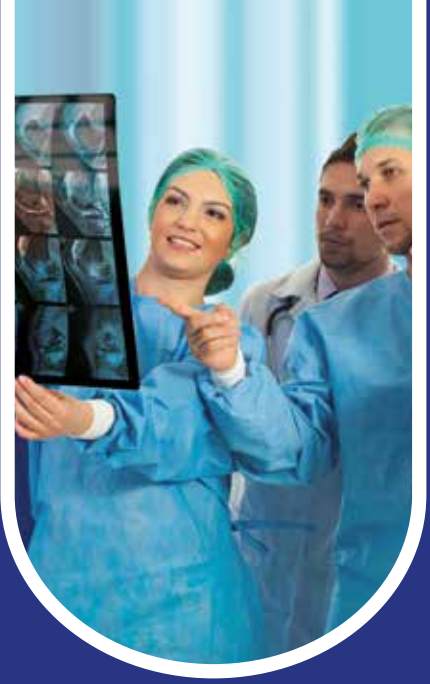
European Society of Sports Traumatology, Knee Surgery & Arthroscopy

ESSKA



The ESSKA Paediatric Anterior Cruciate Ligament Monitoring Initiative (PAMI)

Matteo Denti
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Introduction

Paediatric ACL injuries are rare diseases, with severe functional consequences for the injured young patients in the long run.

Due to the growing popularity of sports at risk for knee injuries and the professionalization of youth sports - with the rise of youth sports academies being built in many European countries - the incidence of pediatric ACL injuries is constantly increasing.

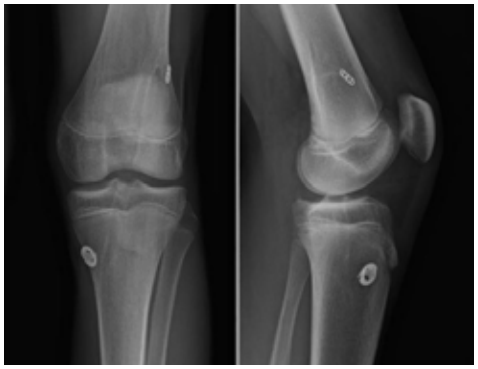
Therefore, the ESSKA paediatric anterior cruciate monitoring initiative was launched by the ESSKA board after the congress in Amsterdam in 2014. Its goal is to gain further knowledge in this field with the hope that a pediatric ACL registry may be developped one day in Europe.

A first step was to perform a survey to evaluate the daily clinical practice among ESSKA members. It was conducted by Havard Moksnes (Norway) whom we want to thank for his commitment.

To thank the participants of the survey and to give them feedback for their efforts, we decided to produce this brochure which will be given to all attendees of the Barcelona congress. They have been published more extensively in the March issue of the ESSKA journal which was dedicated to the paediatric knee, under the guidance of Rainer Siebold (Germany), Lars Engebretsen (Norway) and Romain Seil (Luxembourg).

The initiative is still in its initial steps. To be successful, it will require further efforts and a large amount of resources. First donations and grants were thankfully received through the ESSKA Foundation from our corporate partner Smith & Nephew as well as the Olympic Solidarity. I hope that you will find this information useful and that it may stimulate you to participate in this collective effort for the benefit of the youngest of our patients.

Milan and Luxembourg, April 2016



The initiative

Paediatric intrasubstance anterior cruciate ligament (ACL) ruptures are worrisome and there is very limited high-quality research to provide evidence-based guidance for clinicians involved in the treatment of these injuries. ACL injuries are serious and in most cases lead to prolonged reduced participation in desired activities, with the risk of long-term negative health effects through potential early knee osteoarthritis.

Recent literature suggests an increased incidence of ACL injuries in children, and that the perceived increased occurrence may be due to higher participation and early specialisation in sports. However, no epidemiological studies are available either with historical or new data to support these perceived increase in paediatric ACL injuries. Thus this could be because of increased awareness and advances in diagnostic methods.

The ESSKA Paediatric Anterior Cruciate Ligament Monitoring Initiative (PAMI) was established in 2013 with an aim of creating a multinational network of centres dealing with this clinical problem in order to share knowledge, to increase awareness, and to improve:

- the understanding of the injury's occurrence
- the treatment approaches
- the understanding of the long-term effects
- anatomy, biomechanics and reconstruction development

The final goal of the initiative is the creation of an international paediatric ACL registry.

Project Chairmen:

Lars Engebretsen

Håvard Moksnes

The survey

The first step was to conduct an e-survey among members and affiliates of ESSKA to provide an updated knowledge on the current treatments for paediatric ACL injuries.

The findings of this survey were recently published in KSSTA1. An invitation to participate in the study was sent to 2,236 ESSKA members and affiliates, and received 491 (22%) unique responses. Forty-five percent of the responses (221 out of 491) were registered following the initial invitation. Among the respondents 445 (91%) were orthopaedic surgeons, with 354 (72%) stating that they were involved in treatment of paediatric ACL injuries *(Table 1)*.

Table 1. Summary describing the respondents' professional experience

	Yes	No
Are you an orthopaedic surgeon? (n=491)	445 (91%)	46
Do you perform adult ACL reconstructions? (n=491)	426 (87%)	65
Do you treat paediatric ACL injuries? (n=491)	354 (72%)	137
Do you perform paediatric ACL reconstructions yourself? (n=354)	304 (86%)	50

Figure 1. How many skeletally immature children with ACL tears did you see in 2012?

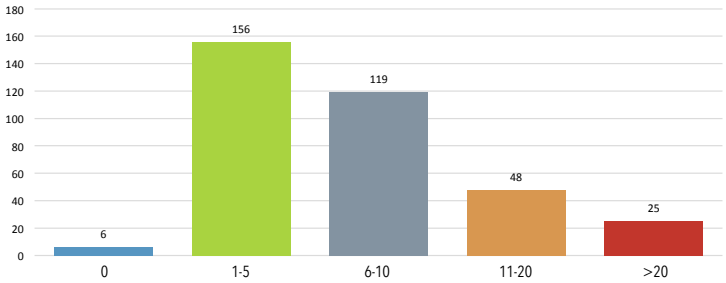


Figure 2. What is your preferred treatment algorithm for pediatric ACL injuries?

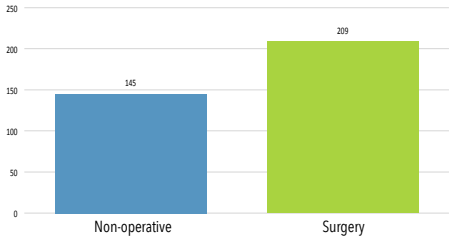


Figure 7. If you consider surgery, do you perform systematic skeletal age determinations before deciding?

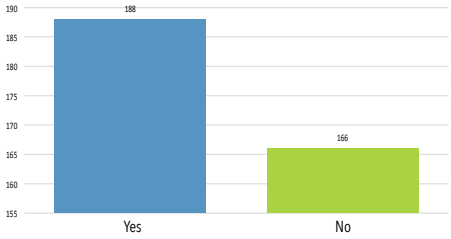


Figure 3. When you perform pediatric ACL reconstructions, which is your preferred surgical treatment ?

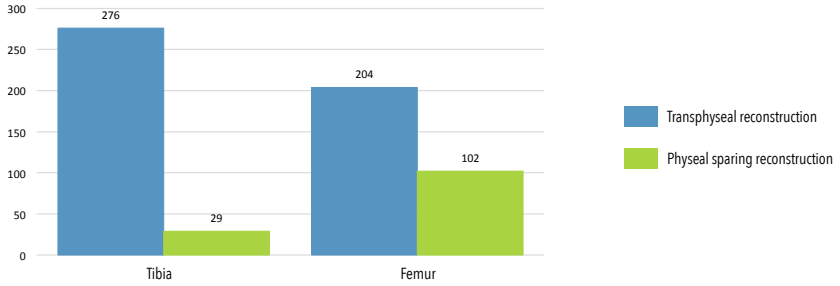


Figure 4. When you perform pediatric ACL reconstructions, which is your preferred graft ?

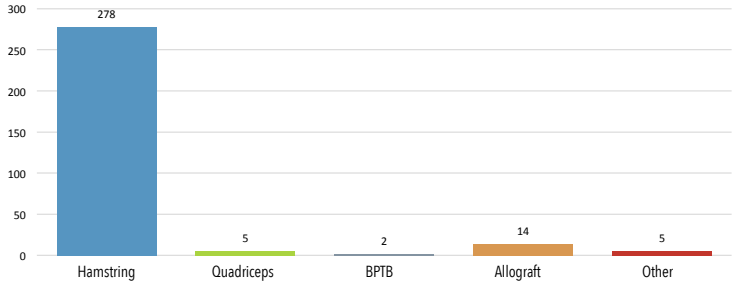
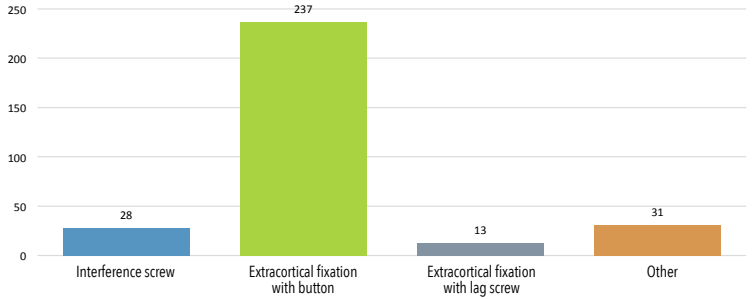


Figure 5. Graft fixation technique femoral side



[1] Moksnes H, Engebretsen L, Seil R. The ESSKA paediatric anterior cruciate ligament monitoring initiative. Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA 2016;24(3):680-7.

Figure 6. Graft fixation technique tibial side

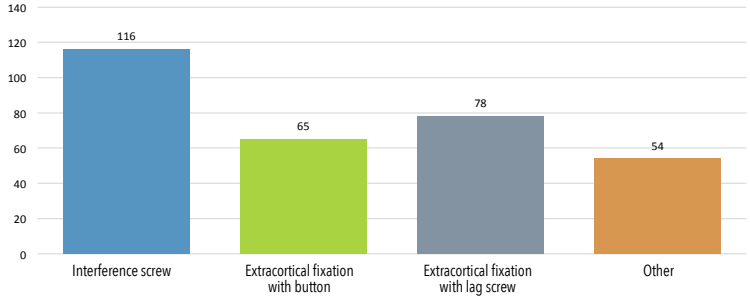


Figure 8. How many clinically relevant growth disturbances have you experienced from pediatric ACL reconstructions in the past?

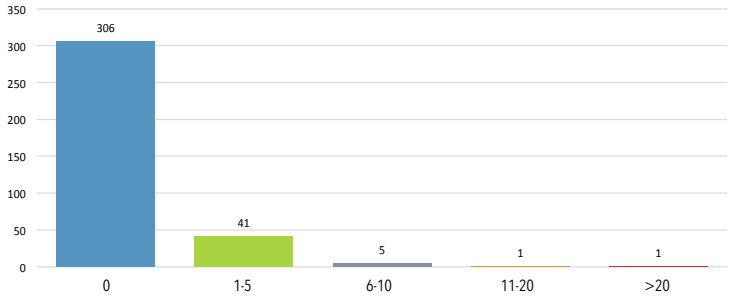


Figure 9. How do you evaluate skeletal growth after surgical treatment?

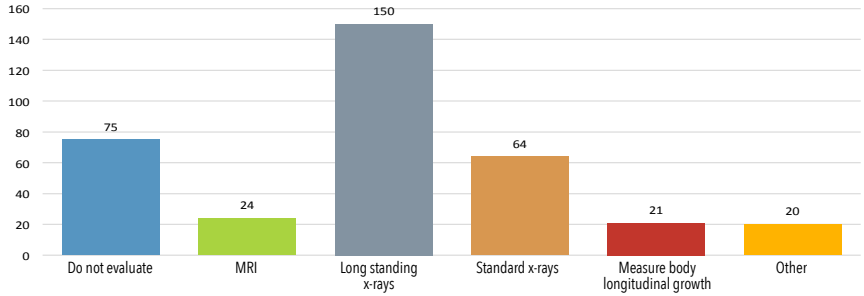
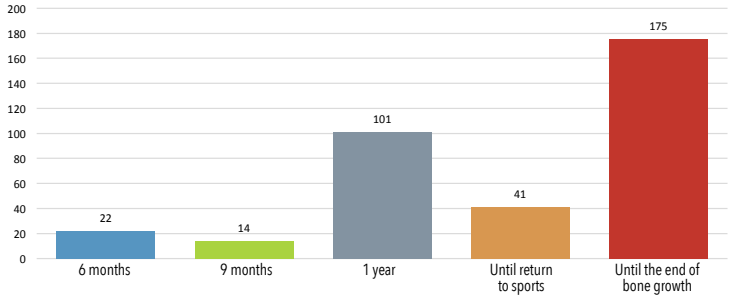


Figure 10. For how long do you perform clinical follow-ups of the children after ACL reconstruction?



Highlighted results

Among the respondents involved in treatment of paediatric ACL injuries 192 (54%) reported that they had seen more than six injuries during 2012. In total, the number of paediatric ACL injuries seen by those participating in 2012 was at least 1,923 (Figure 1).

The majority of participants (59%) stated that they preferred a surgical treatment algorithm for paediatric ACL injuries, and 91% of the surgeons performing paediatric ACL reconstructions preferred the hamstring tendon autograft. Transphyseal surgical techniques were most commonly reported for both the femoral (67%) and tibial (91%) approach (Figure 2, 3 and 4).

Extracortical graft fixation with a button was the most common on the femoral side (78%) while fixation techniques were more varied on the tibial side (Figure 5 and 6).

Only about half the participants (53%) reported that they performed skeletal age determinations before deciding on surgical treatment (figure 7).

Forty-eight (14%) participants reported to have seen at least 102 (Figure 8) clinical relevant growth disturbances after paediatric ACL reconstructions in the past.

Forty-two percent administered long-standing radiographs to evaluate skeletal growth after surgical treatment, while 36% used other methods and 21% did not perform post-surgical measures for skeletal growth (Figure 9).

Fifty-one percent of the surgeons did not follow up their operated patients until the end of bone growth; 6% ended the follow up after six months, 4% after nine months, 29% after one year and 12% at the time of return to sports (Figure 10).

Conclusion

This survey documents that the incidences of paediatric ACL injuries and idiopathic growth disturbances may be higher than previously estimated.

Treatment algorithms and surgical techniques are highly diverse and consensus could not be identified.

It is worrying that only half the surgeons reported to follow up children until skeletal maturity after surgical treatment.

The survey results highlight the importance of international multicentre studies on paediatric ACL treatment and the development of an outcome registry to enable prospective data collections.

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