

Hip surgery for treatment of femoroacetabular impingement syndrome – re-review

Final evidence report: Peer review, comment and response

October 22, 2019

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Hip Surgery Procedures for Treatment of Femoroacetabular Impingement Syndrome – Update Report

Provided by:



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October 22, 2019

Responses to clinical and peer reviewers

Aggregate Analytics Inc. is an independent vendor contracted to produce evidence assessment reports for the Washington Health Technology Assessment (HTA) program. For transparency, all comments received during public comment periods are included in this document and attachments. Comments related to program decisions, process or other matters not pertaining to the evidence report, are acknowledged through inclusion only.

Specific responses pertaining to peer reviewer comments are included in **Table 1**. Draft report peer reviewers include:

- Paul Manner, MD, FRSCS, Professor of Orthopedics & Sports Medicine, Orthopedic Surgery, University of Washington, Seattle, WA
- Mia S. Hagen, MD, Assistant Professor of Orthopedics & Sports Medicine, Orthopedic Surgery, Stadium Clinical Surgical Director, University of Washington, Seattle, WA

Responses to public comments may be found in **Table 2**. These include:

- Name withheld due to inclusion on personal health information.

Table 1. Responses to Clinical and Peer Reviewers

Comment		Response
Paul Manner, MD, FRSCS, Professor of Orthopedics & Sports Medicine, Orthopedic Surgery, University of Washington, Seattle, WA		
Specific comments		
Introduction/ Key considerations highlighted by clinical experts, pages 5-6	More emphasis might be placed on the findings that up to 75% of asymptomatic persons display some radiographic findings consistent with FAI. If radiographic signs are found in more than half the population, it’s hard to see how these represent pathologic findings. Essentially, normal variation is being deemed pathological.	Thank you for your suggestion. We incorporated suggested edits as appropriate.
Background, pages 19-28	Please emphasize low levels of evidence here: the systematic reviews noted here are typically of the same studies, almost none of which are level I or II. The majority are IV (case series) and V (expert opinion).	Thank you for your suggestion. We included a sentence at the beginning of section 2.8 to reflect this concern.
Results, page 57	Need to emphasize that the confidence intervals are 0-100% in some cases. The tests listed are literally of no help at all.	Thank you for your suggestion. We incorporated suggested edits as appropriate.
Results, page 63	Radiographic signs show low kappa – need to emphasize this as well.	Thank you for your suggestion. We incorporated suggested edits as appropriate.
Overall Presentation and Relevancy	<p>Overall, this is an excellent piece of work. If I have any criticism, I would say that it understates the generally poor quality of the evidence presented in support of the concept and treatment of FAI. There is an unfortunate trend in orthopaedics (and perhaps in medicine as a whole) to regard early studies, and studies written by “experts,” as authoritative. These early studies, regardless of quality, tend to become the canon for all further investigations. The result is that bad ideas become enshrined forever.</p> <p>I do not mean to single out FAI for this – in the past, we’ve seen enthusiastic adoption of spine surgery for degenerative disc disease where the indications include MRI findings which are essentially normal. But real harm can result from overtreatment, and treatment of poorly characterized and poorly understood problems. In the current environment of FAI, where the number of randomized trials can be counted on one hand, and where those trials show little if any improvement with surgical treatment, caution must be paramount.</p>	Thank you.
Quality of Report	Superior	Thank you.

Comment		Response
Mia S. Hagen, MD, Assistant Professor of Orthopedics & Sports Medicine, Orthopedic Surgery, Stadium Clinical Surgical Director, University of Washington, Seattle, WA		
Specific comments		
Introduction; Overview of topic adequate?	Yes	Thank you.
Introduction; Topic of assessment is important to address?	Yes – but maybe would be more obvious if listed specific numbers such as incidence of hip arthroscopy in US (e.g. 10 year trends) so reader can see that it occurs quite often now and many/most of general public has heard of hip impingement and hip arthroscopy.	Thank you for your suggestion. We incorporated suggested edits as appropriate.
Introduction; Public policy and clinical relevance are well defined?	Yes for clinical relevance, I’m not sure that public policy was addressed.	Thank you.
Introduction; Page 1, Line 6	The sentence: “Morphologic characteristics of FAI and labral tears...” seems out of place right here. I would delete this and probably move to a different paragraph, the intro which states something along this lines of: “Despite increased incidence of the diagnosis of FAI syndrome there remain challenges. Morphologic characteristics of FAI and labral tears[and something about the incidence of labral tears found on asymptomatic MRI]. Although there are studies linking FAI morphology to early onset of osteoarthritis this is not clearly stated in all literature especially regarding pincer morphology. And finally it is unknown if surgical correction of morphology will impact onset of osteoarthritis...etc etc”. Organization-wise, it makes more sense to me to start w/what we think we know about how to define FAI and how to treat it (with nonop/operative reported outcomes), and then another section that talks about the limitations of our knowledge and reasons for controversy.	Thank you for your suggestion. We incorporated suggested edits as appropriate.
Introduction (Executive Summary); Paragraph 2, line 7	<p>Adductor or abductor strength? Please make sure this is not a typo as those are 2 different muscle groups.</p> <p>I would say: “proponent of operative treatment...and potentially retard the progression”</p>	<p>We have verified with the cited study and adductor has been used correctly here.</p> <p>We have made this edit.</p>
Introduction (Executive Summary); Last paragraph, last sentence	I think most hip preservationists would agree that since the Warwick agreement and Lynch et al (JAAOS 2019) there is consensus about specific indications and suggested nonoperative treatment	We have made some edits. The cited article by Peters indicates that at the time of their review, only 56% of published studies used the triad of symptoms, clinical signs and diagnostic imaging

Comment		Response
		for FAIS diagnosis suggested by the Warwick agreement and that imaging information was the primary criterion for doing surgery. The statement refers to the historical perspective; the contextual questions and guideline section contain the updated information available via these two documents.
Introduction; Overall	Overall I think the language in the first portion of introduction is biased as it does not reference any of the prospective and level 1 data on how patients do with this surgery when they are appropriately indicated.	References to surgical outcome have been added. The purpose of the review is to compare surgical and non-operative treatments.
Introduction; Contextual Question 2	Asking “what are the expected treatment outcomes of hip surgery for FAI” and then asking “are there validated instruments ...” seem like two totally different questions. The former sounds like it more appropriately is a part of Key Question 1 (section 1.3).	These questions were also part of the prior report. The intent was to understand what validated outcomes had been used to assess outcomes of FAI surgery and their psychometric properties.
Introduction; Key Question 3	I would make sure BMI and chronic narcotic usage are a part of this. Per Figure 1 it does not appear they are.	While these variables were not explicitly listed in the analytic framework/key questions, we would not have excluded them from our report had the included trials reported on them. None of the included trials reported on BMI or chronic narcotic usage as modifiers of treatment effect.
Introduction; Figure 1, page 2	Why is ROM an intermediate outcome? (vs. short term). That does not make much sense to me. Also why would ROM contribute to cost effectiveness? In general, do you want to have the Analytic Framework in this section of the report before mentioning any of the outcomes – it just seems confusing here (vs. in Methods).	It is listed as an intermediate outcome as it is not considered a direct clinical outcome like function or pain. The arrow in the analytic framework is intended to indicate that intermediate outcomes <i>in general</i> may (or may not) be measured/evaluated in cost-effectiveness studies; in this case, ROM would likely not be part of cost-effectiveness studies. We realize that various readers may order things differently; we follow our standard template for HTA reports.
Introduction; page 4	When reporting the prevalence of FAI, would it be helpful to also list the # hip arthroscopies performed annually in U.S. to show increasing incidence of this?	We have added a paragraph providing information with regard to incidence of hip arthroscopies.

	Comment	Response
<p>Introduction; page 8, bullet points</p>	<p>Only including detailed text on negative studies about association between FAI and OA seems biased. Would balance w/ Khanna et al AJSM LOE 3. Also the Wylie review from JAAOS 2018 summarizes positive and negative data nicely (tables 1 and 2).</p>	<p>Our intent is to be objective. As stated, the bullet points are from studies reported in the previous review and are labeled as such. Throughout, we have indicated that evidence is inconsistent. We have edited this section for clarity.</p> <p>The paragraphs below those referenced in this comment describes that there continues to be inconsistent evidence across studies. Citations for studies that have reported associations with OA and need for THA (presumably a surrogate for advanced OA) are specifically cited as are those which did not find associations based largely on the Tables 1 and 2 in the Wylie 2019 review. (This narrative review is not a systematic review and selection criteria for studies listed in the tables is not clear).</p> <p>Context regarding some factors which may partially explain reasons for some discrepancies across studies, including study quality and timing, is provided.</p>
<p>Introduction; pages 9-10</p>	<p>Both of these sections seem like they are missing information.</p>	<p>The prioritized outcomes are listed in this section; information on specific outcomes measures is in contextual question #2.</p> <p>The section for Washington State Utilization Data is populated by the Health Technology Assessment Program and not AAI as the evidence vendor.</p>
<p>Background; Content of literature review/ background is sufficient?</p>	<p>Could be improved, see below. The list of systematic reviews and consensus statements seems complete to my knowledge.</p>	<p>Thank you. We incorporated suggested edits as appropriate.</p>

	Comment	Response
Background; Page 11, first paragraph	The first mention of hip impingement was in 1933 (Dr Elmslie) in BMJ. I had thought Ganz’s first account of FAI was found as a complication in postop PAO patients. (CORR 1999). Regardless, the CORR 1999 article is probably the seminal paper that most hip preservationists are familiar with.	Thank you.
Background; Page 11, third paragraph	Again would include both a concrete example of association between OA and FAI (such as Khanna et al) and one against rather than just the against.	We have edited sections related to the discussion of OA. Overall, the evidence is inconsistent and primarily comes from studies at potentially high risk of bias.
Background; Page 11, fourth paragraph	The labrum has many functions, not just as a cushion for the joint. Would include the other functions of the labrum most notably: It seals a pressurized fluid layer to lubricate cartilage and slow rate of fluid expression from porous cartilage layers (thereby limiting cartilage deformation and stress).	We have updated this sentence to more accurately reflect the various roles of the labrum.
Background; Page 12, lines 1-2	The statement; “indicating that a ‘normal’ hip joint is rare” is biased. For example, the review referenced by Frank includes older patients and thus if one were to only look at patients under the age of 30 the majority of hips do not have labral tears.	We have removed the part of the sentence that says “indicating that a ‘normal’ hip joint is rare”. Of note, the mean age in the cited article by Frank et al .was 25.3 years.
Background; Page 12, Section 2.3	<p>Most hip preservationists consider “mixed type” FAI to be a real thing and consider it to be part of the classification. We often find patients with both cam morphology and anterolateral acetabular overhang.</p> <p>Additionally the authors do not anywhere in this report mention extra articular impingement such as that caused by a Type III AHS (subspine impingement).</p>	<p>Thank you. We recognize that patients commonly present with a combination of both cam- and pincer-type FAI (i.e., mixed-type). We revised the wording for clarification.</p> <p>We have added a short paragraph to the end of section 2.3 briefly describing extra-articular impingement for completeness. Though extra-articular impingement shares some common clinical features with intra-articular FAI, it is considered a distinct/unique entity and is beyond the scope of this report.</p>
Background; Page 13, Section 2.4.2	<p>The goal of FAIS surgery is not to improve hip ROM. The goal is to improve patient pain and function such as allow return to sport.</p> <p>Also a note -- the labrum does not need to be taken down in order to remove portions of the acetabular rim.</p> <p>Also classifying this into treatment of cam and pincer/labrum as separate sections does not make a lot of sense to me. I would remove the category</p>	<p>Thank you. We made clarifying edits to this section.</p> <p>A statement of this nature has been added to the sentence.</p> <p>The organizational structure of this section has been changed to reflect this recommendation.</p>

Comment		Response
	<p>headings. All bone morphologies and labral tears are addressed at the time of surgery.</p> <p>Arthroscopy + limited open I believe is rarely done now. Arthroscopic techniques and instruments have improved dramatically, thus I would argue that adding a limited open does not add any improved exposure these days</p>	<p>We have included information regarding this in the background</p>
<p>Background; Page 15, second paragraph</p>	<p>I would emphasize the Lynch 2019 document a bit more. This was created by most of the lead hip arthroscopists/preservationists in the country and offers solid advice and consensus criteria. The older studies emphasized earlier in the section seem less relevant in my opinion.</p> <p>The report also needs to emphasize that hip arthroscopy is NOT a treatment for osteoarthritis. The paragraph before section 2.6 is critically important and has been proven by multiple large prospective cohorts– this is not a procedure for arthritis and should not be done in Tonnis >2 or joint space <2mm.</p>	<p>This document is cited and described in a number of places; the criteria are delineated in the guideline section (2.7) of the report and with the contextual questions.</p> <p>We have added a sentence to emphasize this point.</p>
<p>Background; Page 15, Section 2.6</p>	<p>What is meant by “loss of fixation requiring revision”? Does this refer to trochanteric osteotomy for surgical dislocation? Arthroscopy and open surgery procedures are technically very different, with different risk profiles, that it might make sense to divide complications into 2 groups: arthroscopic complications and open complications.</p>	<p>We have revised this sentence to say “revision surgery”. In the results section we have reported complications separately for arthroscopy and open surgery.</p>
<p>Report Objectives & Key Questions; Aims/ objections clearly address relevant policy and clinical issue?</p>	<p>Yes</p>	<p>Thank you.</p>
<p>Report Objectives & Key Questions; Key questions clearly defined and adequate for achieving aims?</p>	<p>Yes (except for that one section mentioned previously where CQ#2 had too many parts to it – that seemed to have dropped off on page 37 however and it is more specific).</p>	<p>Thank you.</p>
<p>Report Objectives & Key Questions; General comments</p>	<p>As mentioned previously, outcomes are not intuitive to me. Why is range of motion (intermediate) an outcome?</p> <p>Complications/adverse events are listed separately under the “safety outcomes” category but I would argue it encompasses things like: H.O., trochanteric nonunion, nerve damage, mortality...so it is odd to split it up like this. Especially</p>	<p>We followed the list of outcomes from the 2011 report and the structure of the key questions.</p> <p>We realize that there may be different perspectives on report organization. The organization for the report is based on a</p>

Comment		Response
	<p>as compared to page V line 3. I think the way the primary outcomes are listed on Page V (function, pain, conversion to THA, and adverse events) makes sense and should be repeated for page iii for consistency.</p> <p>On Page 44 last paragraph Adverse events is listed as a primary outcome but in many of the other tables it is listed separately as a safety outcome. I would prefer the report to stay consistent.</p>	<p>standard template for our HTAs, the prior report and follows the Key Questions.</p> <p>Serious adverse events are considered primary outcomes; The report follows the structure of the key questions.</p>
Methods; Method for identifying relevant studies is adequate?	Yes	Thank you.
Methods; Criteria for the inclusion and exclusion of studies is appropriate?	No – I question the exclusion of studies that contain revision surgery as this limits some of the higher numbered prospective cohorts.	The KQs and PICOTS were posted for public comment and we received no feedback, either from the public or from clinical experts, regarding the proposed inclusion and exclusion criteria. This is consistent with the previous report. The focus of this report is on the comparison of nonoperative versus operative care; studies of operative interventions were included for completeness and for safety primarily.
Methods; Method for Level of Evidence (LoE) rating is appropriate and clearly explained?	No	Thank you. Without additional information it is unclear what the concern is. The methods used for this health technology assessment (HTA) follow accepted methods based on AHRQ, IOM and other guidelines for systematic reviews and HTAs.
Methods; Data abstraction and analysis/ review are adequate?	Yes	Thank you.
Methods; Page 39, Table 5	<p>Why would asymptomatic patients undergo treatment for FAI?</p> <p>Consider excluding microfracture patients or listing as a subcategory.</p>	<p>We assume that they would not; however part of the stated scope was to report on this if information was available.</p> <p>Thank you for your suggestion. The KQs and PICOTS were posted for public comment and we</p>

Comment		Response
	<p>Do you have a list of the case series which were excluded? The concept of “focused on safety” seems subjective.</p> <p>What was done about large systematic reviews / meta analyses?</p>	<p>received no feedback, either from the public or from clinical experts. Studies evaluating microfracture specifically were excluded. Across included studies, microfracture was done in a small proportion of patients as an additional intervention at time of surgery for FAI; however, data was not reported separately for those who had microfracture vs. no microfracture. Details of study interventions can be found in Appendix F.</p> <p>A list of all studies excluded after full-text review can be found in Appendix C. Case series that stated they looked specifically for adverse events were included.</p> <p>Recent SRs are summarized in the background. Per our usual protocol, the bibliographies of SRs were check for relevant studies that met inclusion criteria. In addition, SRs reporting on safety that met inclusion criteria were summarized in the results, section 4.3.4</p>
Results; Amount of detail presented in the results section appropriate?	Yes	Thank you.
Results; Key questions are answered?	No	Thank you. Without additional information it is unclear what the concern is.
Results; Figures, tables and appendices clear and easy to read?	No	Thank you. Without additional information it is unclear what the concern is. We recognize that these reports contain a lot of detailed information and we do our best to present it in a clear fashion.

Comment		Response
Results; Implications of the major findings clearly stated?	No	Thank you. While this section is not part of the report format, the strength of evidence summary tables (Section 5) and related text contain conclusions regarding the evidence based on GRADE.
Results; Have gaps in the literature been dealt with adequately?	Yes	Thank you.
Results; Recommendations address limitations of literature?	Yes	Thank you.
Results; Page 48, section 4.1.1	<p>In reviewing the RCTs listed, I would say that they all met the Warwick criteria for dx of FAI. Symptomatic hip with radiographic criteria for FAI and clinical exam confirming hip pain. The Warkwick Agreement does not give specifics on these criteria. It simply says that you have to have all 3 domains.</p> <p>Thus to answer the question about validation of definition, I think it is validated with prospective RCT data as following these criteria listed above, patients improved w/ surgical correction.</p>	<p>The table provides the data available from the RCTs. In 3 of the 4 trials, specifics regarding clinical exam/findings were not described.</p> <p>Formal validation studies are designed specifically to compare criteria with specific gold or reference standard. To the extent that prospective, formal studies for the criteria were identified, they were included.</p>
Results; Page 79, section 4.1.2	<p>I do not understand what Tonnis grading has to do with this question. In general the main outcome for FAIS correction is NOT tonnis score. Hip arthroscopy for FAIS has never been shown to prevent progression of OA. The purpose of hip arthroscopy for FAIS is to improve patient hip function and hip pain. I would not use Tonnis score as an outcome measure here.</p> <p>Also I again ask why is the first part of this question is in there? It seems unrelated to the second two questions.</p>	<p>We agree that the question as worded is confusing and have made some edits for clarity. Tonnis grade and Kellgren-Lawrence scales were used in included studies to evaluate pre-operative OA; some studies also reported these to assess progression to OA at later follow-up. Progression to OA is one of the stated outcomes for this report. Thus, the validity and reliability of these measures is of importance. For consistency with the prior report and to provide context, the updated information is provided.</p> <p>These questions were also part of the prior report. The intent was to understand what</p>

Comment	Response
	<p>validated outcomes had been used to assess outcomes of FAI surgery and their psychometric properties.</p> <p>This comment appears to refer to using the Tonnis scale to determine those who may nor may not be candidates for surgery and later evaluation of surgical success/outcomes. This is different than formal psychometric evaluation studies that provide information on various aspects of validation (e.g. criterion, construct, content) and reliability, which is are the focus of this question. For this question, validity refers to whether an outcome instrument measures what it was intended to measure.</p>
<p>Results; Page 90, section 4.2.1</p>	<p>I think the authors are missing several comparative prospective cohorts. For example: Domb et al (AJSM 2016, A Prospective Survival Analysis of Primary and Revision Surgeries in a Large Mixed Cohort) . I understand the exclusion criteria in this report included “revision surgery” but I think this is a mistake to exclude some of these larger prospective studies in this way as they contain data with high follow up and large numbers.</p> <p>Domb 2016 (Clinical Outcomes of Hip Arthroscopic Surgery: A Prospective Survival Analysis of Primary and Revision Surgeries in a Large Mixed Cohort. Am J Sports Med. 2016 Oct;44(10):2505-2517. PMID: 27590174) does not meet our inclusion criteria because >20% of patients (27%) were undergoing primary arthroplasty for diagnoses other than FAI or surgery did not address the bony abnormality present with FAI; as stated, revision arthroplasty is excluded. The following two articles were sent via a separate email and are excluded for the following reasons:</p> <p>Domb BG et al. Predictors of Clinical Outcomes After Hip Arthroscopy: A Prospective Analysis of 1038 Patients with 2-Year Follow-up. Am J Sports Med. 2018 May;46(6):1324-1330. PMID: 29570354. Indication for hip arthroscopy not reported/unclear.</p>

Comment	Response
	<p>Newman JT et al. Revision Hip Arthroscopy: A Matched-Cohort Study Comparing Revision to Primary Arthroscopy Patients. Am J Sports Med. 2016;44(10):2499-2504. >20% of patients (37%) were undergoing arthroplasty for diagnoses other than FAI or surgery did not address the bony abnormality present with FAI</p>
<p>For Figure 4/5 – why is short term iHOT 33 and HOSSport SOE considered low if the pooled RCTs are so favorable? (and according to page 152 the RCTs are listed w/ SOE as high).</p>	<p>According to GRADE and AHRQ methodologies, RCT evidence is initially considered High strength of evidence but can be downgraded based on limitations described in detail in the Methods section of the report (Section 3.1.7). In these specific instances, the iHOTT-33 at short-term was downgraded twice because the individual trials showed different results (inconsistent) and the confidence interval was somewhat wide (imprecise). For the HOS-Sport, 1 of the 2 trials had serious methodological flaws (risk of bias) and the confidence interval for the pooled effect was wide (imprecise).</p>
<p>In general, the way the results are formatted is very long and arduous to read; it is challenging to figure out the bottom line. It would be nice if there were pooled results as in the Minkara systematic review paper.</p>	<p>The Minkara review is summarized in the background. Where possible, data for studies comparing head to head studies of operative and non-operative care were pooled and presented, per the purpose of this review.</p> <p>The pooled information in the Minkara is based on pre- post studies which are basically case series and do not address the KQ of whether operative vs. non-operative treatment is better.</p>

	Comment	Response
	<p>And a SR to consider including for outcomes: https://www.ncbi.nlm.nih.gov/pubmed/27324968</p>	<p>This review summarizes HOS and mHHS findings across studies of arthroscopy done for various indications and is not specific to patients with FAI. The focus of the contextual question is on psychometric properties of measures as tested in FAIS patients or young patients with hip pain specifically. The MCIDs reported for the various measures are provided and where reported in the included studies, PASS or measures of the proportion of individuals who met specific MCIDs were reported.</p> <p>We have noted the PASS thresholds reported in Chahal et al. Am J Sports Med. 2015 Aug;43(8):1844-9 in the outcomes table for contextual question #2</p> <p>The Palmer study was the only RCT on reporting on PASS; it was not listed in their protocol as an outcome.</p>
<p>Results; page 120, section 4.3, first bullet point.</p>	<p>Biased paragraph: “given that ax is invasive while PT is not, one would not expect serious adverse events or death with PT.” Please refer to Figure 7. Complications can definitely happen in PT. For example, MI. Or as I have seen in clinical practice – shoulder dislocation, patella dislocation, hip fracture.</p> <p>Additionally the development of postless traction (used widely across the country) has decreased pudendal nerve injury/labral swelling/scrotal injury/etc as there is no perineal post.</p>	<p>We have removed this sentence from the paragraph.</p> <p>Thank you.</p>
<p>Results; page 140, section 4.4</p>	<p>What other categories were investigated? BMI? Baseline tonnis/joint space <2 mm? (I think the latter is particularly relevant). Why only reviewing RCTs for this topic?</p>	<p>No subgroup/modifying factor was excluded; we included everything reported by the trials. The Key question ask about differential efficacy or safety of at treatment. This requires evaluation of both treatment exposures and exposures related to the categories/strata being evaluated and a formal test for interaction using data from studies with the least potential for bias or confounding (i.e. RCTs). Suggested reference:</p>

Comment		Response
		<p>Dettoni JR, Norvell DC, Skelly AC, Chapman J. Heterogeneity of treatment effects: from "How to treat" to "Whom to treat". <i>Evid Based Spine Care J.</i> 2011;2(2):7–10. doi:10.1055/s-0030-1267099</p>
<p>Results; page 144, Mather 2018 & Shearer 2012</p>	<p>Please try to avoid subjective statements. Why write “poor quality” in the first sentence? Why not just list the findings and then list a QHES score at the end. There is no standardized interpretation of QHES.</p>	<p>The statement of “poor quality” is based on stated methods of formal critical appraisal used to evaluate the studies. As stated in the methods and the appendices, the quality of economic studies was assessed using the QHES in combination with principles of epidemiology. A general interpretation of QHES that is used indicates that scores of 75–100 are consistent with high quality studies. (Chiou, Foster, Spiegel below) A number of publications have suggested categorization of interpretation of QHES scoring (references below) for scores below 75. Based on QHES alone, some authors suggest scores of 50–74 be considered fair (Spiegel), other suggest scores in this range be considered moderate (Foster). Methodological concerns that decrease confidence in the modeled estimates of cost-effectiveness for the Mather and Shearer studies are also described in the subsequent paragraphs in the report; factors such as the reliance of models on case series and expert opinion which do not appear to have included comparable groups for operative vs. non-operative treatment, methods for determining model inputs (non-standard utility measures) and testing assumptions for model inputs and other factors that lead to the determination of “poor” quality for these two studies are described, indicating a corresponding lack of confidence in the results.</p>

Comment		Response
		<p>Foster, et. al. Br J Ophthalmol. 2010 September ; 94(9): 1118–1126. doi:10.1136/bjo.2009.170282.</p> <p>Chiou, et. al MEDICAL CARE Volume 41, Number 1, pp 32–44</p> <p>Spiegel, 2004 GASTROENTEROLOGY 2004;127:403–411</p>
Conclusions; Are the conclusions reached valid?	I could not find an overall “conclusions” section.	While a general conclusion section is not part of the report format, the strength of evidence summary tables (Section 5) and related text contain conclusions regarding the evidence based on GRADE.
Overall Presentation and Relevancy; Is the review well structured and organized?	No	We realize that there may be different perspectives on report organization. The organization for the report is based on a standard template for our HTAs, the prior report and follows the Key Questions.
Overall Presentation and Relevancy; Are the main points clearly presented?	Yes	Thank you.
Overall Presentation and Relevancy; Is it relevant to clinical medicine?	Yes	Thank you.
Overall Presentation and Relevancy; Is it important for public policy or public health?	Yes	Thank you.
Overall Presentation and Relevancy; General Comments	<p>I believe my feedback is listed previously but to summarize main points:</p> <ol style="list-style-type: none"> 1) Watch for biases - consider reorganization of certain sections to reflect this, as well as include a balance of literature when reporting specific examples. 	We have incorporated suggestions as appropriate throughout the report.

Comment	Response
<p>2) Consider complications of open and arthroscopic surgery separately</p> <p>3) Consider including extra articular FAIS</p> <p>4) Additionally, a large intrinsic issue with FAI is that many of the questions the report is asking will never be able to be solved. For example the authors note in section 4.1.1 that despite two important manuscripts which attempt to define FAIS and set forth best practice guidelines, there is very low/insufficient evidence regarding agreed upon criteria for case-definition. This is because by nature this is a dynamic condition dependent not only on alpha/center edge angle but also on pelvic tilt, femoral and acetabular version, soft tissue laxity, and activity level. Thus there may never be a consensus on strict definition (e.g. 50 degrees versus 60 degrees for alpha angle, or that patients must have a cam or must have a cross-over sign) as it probably does not exist (hence, dynamic).</p> <p>The report fails to highlight clearly the major concept which is that patients almost overwhelmingly improve after arthroscopic treatment for FAIS, as long as they do not have the exclusion criteria listed in the best practice guidelines. This is borne via multiple longitudinal analyses and has been summarized in systematic reviews of thousands of patients (Minkara systematic review). I think this should be more clearly presented.</p>	<p>While not explicitly reported separate, when adverse events differed between studies or between arms of the same study evaluating arthroscopy vs. open hip dislocation we called out/highlighted these differences. In general, the frequency of complications as reported by the included studies did not differ greatly between these two surgical approaches.</p> <p>As stated above, we have added a short paragraph to the end of section 2.3 briefly describing extra-articular impingement for completeness. Though extra-articular impingement shares some common clinical features with intra-articular FAI, it is considered a distinct/unique entity and is beyond the scope of this report.</p> <p>Thank you for your perspective.</p> <p>The report does describe improvements in multiple outcomes related to surgical intervention in multiples sections of the report including the summary of SRs of surgical studies in the background and extensive reporting of findings from surgical studies in the results section. In the absence of a comparator group</p>

Comment		Response
		conclusions are limited. The purpose of the report is to compare such outcomes with those from non-operative care in direct head-to-head studies within the same underlying patient population to evaluate <i>comparative</i> effectiveness.
Quality of Report	Good	Thank you.

Responses to public comment on draft report

This second section responds to comments received during the public comment period from the following:

- [REDACTED], RN

A copy of the appeals letter that is referred to below can be found in the Appendix at the end of this document. Personal health information and identifying information has been redacted.

Table 2. Responses to public comments

Comment		Response
[REDACTED] RN		
General	<p>Hello,</p> <p>I am writing to submit my comments about my experience with FAI syndrome. I would like to highly encourage the HTCC to approve surgical treatment of FAI syndrome. I have been suffering from FAI syndrome for about seven months now and have exhausted all options for non-surgical treatment of FAI syndrome without success. Now, I seem to be left to a life of chronic pain because my insurance is denying to pay for the surgery my doctors say is the next step to trying to, at minimum, decrease the excruciating pain in my hip.</p> <p>I have attached a version of my appeal letter to my insurance company for you to review in the hopes that you gain understanding of how leaving FAI syndrome untreated impacts the lives of those who suffer from it.</p> <p>Thank you,</p> <p>[REDACTED] RN, BSN</p>	<p>Thank you for your comments and for sharing your perspective.</p>

APPENDIX: Clinical/peer reviews and public comments received

Peer Reviewer #1: Paul Manner, MD, FRSCS, Professor of Orthopedics & Sports Medicine, Orthopedic Surgery, University of Washington, Seattle, WA

Thank you for your willingness to read and comment on the Comprehensive Evidence-Based Health Technology Assessment Review for the **Femoroacetabular Impingement Syndrome (FAIS) Update Report**. Your contribution and time are greatly appreciated.

The general time commitment ranges between 2 and 4 hours; we are able to pay a maximum of 6 hours.

The report and appendices are available at: <https://www.hca.wa.gov/about-hca/health-technology-assessment/femoroacetabular-impingement-fai-syndrome>

This form can be filled out electronically on your personal computer. Enter your identification information and comments directly into the shaded areas; use the **TAB** key to move from field to field. Please enter the section, page, and line numbers where relevant. The shaded comment field will expand as you type, allowing for unlimited text. You have been provided comment fields in each section. Should you have more comments than this allows for, please continue with a blank page. Additionally, we are very interested in your evaluation of the ease of use of our Peer Review Form. Please use the last field to enter suggestions for improvement.

We will be going through the draft for typographical errors as well as grammatical and minor edits, allowing you to focus on the substance/content of the report.

When the Peer Review form is complete, save it to your hard drive and return as an e-mail attachment to: andrea@aggregate-analytics.com; please cc: erika@aggregate-analytics.com

We will need your review by Tuesday, October 1, 2019 at the latest.

If you have questions or concerns please contact andrea@aggregate-analytics.com. Thanks!

Reviewer Identification Information

Reviewer Name	Paul Manner, MD FRSCS
Address	1959 NE Pacific Street, Box 356500 Seattle, WA 98195-6500
Phone	██████████
Fax	
E-mail	pmanner@uw.edu

INTRODUCTION Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Overview of topic is adequate?
- Topic of assessment is important to address?
- Public policy and clinical relevance are well defined?

Page 5-6 **Line many**

More emphasis might be placed on the findings that up to 75% of asymptomatic persons display some radiographic findings consistent with FAI. If radiographic signs are found in more than half the population, it's hard to see how these represent pathologic findings. Essentially, normal variation is being deemed pathological.

Page **Line**

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Page **Line**

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BACKGROUND Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Content of literature review/background is sufficient?

Page 19-28 **Line**

Please emphasize low levels of evidence here: the systematic reviews noted here are typically of the same studies, almost none of which are level I or II. The majority are IV (case series) and V (expert opinion).

Page **Line**

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Page **Line**

Enter Comments Here

REPORT OBJECTIVES & KEY QUESTIONS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Aims/objectives clearly address relevant policy and clinical issue?
- Key questions clearly defined and adequate for achieving aims?

Page **Line**

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Page **Line**

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METHODS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Method for identifying relevant studies is adequate?
- Criteria for the inclusion and exclusion of studies is appropriate?
- Method for Level of Evidence (LoE) rating is appropriate and clearly explained?
- Data abstraction and analysis/review are adequate?

Page	Line
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RESULTS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Amount of detail presented in the results section appropriate?
- Key questions are answered?
- Figures, tables and appendices clear and easy to read?
- Implications of the major findings clearly stated?
- Have gaps in the literature been dealt with adequately?
- Recommendations address limitations of literature?

Page 57	Line table
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Need to emphasize that the confidence intervals are 0-100% in some cases. The tests listed are literally of no help at all.

Page 63	Line
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Radiographic signs show low kappa – need to emphasize this as well.

Page	Line
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Enter Comments Here

CONCLUSIONS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Are the conclusions reached valid?

Page	Line
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OVERALL PRESENTATION and RELEVANCY Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Is the review well structured and organized?
- Are the main points clearly presented?
- Is it relevant to clinical medicine?
- Is it important for public policy or public health?

Page	Line
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Overall, this is an excellent piece of work. If I have any criticism, I would say that it understates the generally poor quality of the evidence presented in support of the concept and treatment of FAI. There is an unfortunate trend in orthopaedics (and perhaps in medicine as a whole) to regard early studies, and studies written by “experts,” as authoritative. These early studies, regardless of quality, tend to become the canon for all further investigations. The result is that bad ideas become enshrined forever.

I do not mean to single out FAI for this – in the past, we’ve seen enthusiastic adoption of spine surgery for degenerative disc disease where the indications include MRI findings which are essentially normal. But real harm can result from overtreatment, and treatment of poorly characterized and poorly understood problems. In the current environment of FAI, where the number of randomized trials can be counted on one hand, and where those trials show little if any improvement with surgical treatment, caution must be paramount.

QUALITY OF REPORT

Quality Of the Report
 (Click in the gray box to make your selection)

Superior **X**
Good
Fair
Poor

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We would appreciate any feedback you have on the usability of this form. Please add comments in the field below.

Enter Form Comments Here.

Peer Reviewer #2: Mia S. Hagen, MD, Assistant Professor of Orthopedics & Sports Medicine, Orthopedic Surgery, Stadium Clinical Surgical Director, University of Washington, Seattle, WA

Thank you for your willingness to read and comment on the Comprehensive Evidence-Based Health Technology Assessment Review for the **Femoroacetabular Impingement Syndrome (FAIS) Update Report**. Your contribution and time are greatly appreciated.

The general time commitment ranges between 2 and 4 hours; we are able to pay a maximum of 6 hours.

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We will be going through the draft for typographical errors as well as grammatical and minor edits, allowing you to focus on the substance/content of the report.

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We will need your review by Tuesday, October 1, 2019 at the latest.

If you have questions or concerns please contact andrea@aggregate-analytics.com. Thanks!

Reviewer Identification Information

Reviewer Name	Mia S. Hagen, M.D.
Address	Street 3800 Montlake Blvd NE, Box 354060 Seattle, WA 98195-4060
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The following review by myself, Dr. Mia S. Hagen, is based on the Sept 3, 2019 document entitled “Hip Surgery Procedures for Treatment of Femoroacetabular Impingement Syndrome – Re-review: Draft evidence report”, provided by Aggregate Analytics Inc (Prepared by Skelly, Brodt, & Kantner).

INTRODUCTION Comments – i.e. Intro and Appraisal

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Overview of topic is adequate? Y
- Topic of assessment is important to address? Y – but maybe would be more obvious if listed specific numbers such as incidence of hip arthroscopy in US (e.g. 10 year trends) so reader can see that it occurs quite often now and many/most of general public has heard of hip impingement and hip arthroscopy.
- **Public policy** and clinical relevance are well defined? Y for clinical relevance, I'm not sure that public policy was addressed.

Page i/1 Line 6

The sentence: “Morphologic characteristics of FAI and labral tears...” seems out of place right here. I would delete this and probably move to a different paragraph, the intro which states something along this lines of: “Despite increased incidence of the diagnosis of FAI syndrome there remain challenges. Morphologic characteristics of FAI and labral tears ...[and something about the incidence of labral tears found on asymptomatic MRI]. Although there are studies linking FAI morphology to early onset of osteoarthritis this is not clearly stated in all literature especially regarding pincer morphology. And finally it is unknown if surgical correction of morphology will impact onset of osteoarthritis...etc etc”. Organization-wise, it makes more sense to me to start w/what we think we know about how to define FAI and how to treat it (with nonop/operative reported outcomes), and then another section that talks about the limitations of our knowledge and reasons for controversy.

Page i Line paragraph 2 / line 7

Abductor or **adductor** strength? Please make sure this is not a typo as those are 2 different muscle groups.

Page i/1 Line para 2 line 7 / line 2

I would say: “proponent of operative treatment...and **potentially** retard the progression”

Page i Line para 2 last sentence

I think most hip preservationists would agree that since the Warwick agreement and Lynch et al (JAAOS 2019) there is consensus about specific indications and suggested nonoperative treatment

Page i overall

Overall I think the language in the first portion of introduction is biased as it does not reference any of the prospective and level 1 data on how patients do with this surgery when they are appropriately indicated.

Page 1 **Line Contextual Q 2**

Asking “what are the expected treatment outcomes of hip surgery for FAI” and then asking “are there validated instruments ...” seem like two totally different questions. The former sounds like it more appropriately is a part of Key Question 1 (section 1.3).

Page 1 **Line Key Q 3**

I would make sure BMI and chronic narcotic usage are a part of this. Per Figure 1 it does not appear they are.

Page 1 **Line Figure 1**

Why is ROM an intermediate outcome? (vs short term) That does not make much sense to me. Also why would ROM contribute to cost effectiveness? In general, do you want to have the Analytic Framework in this section of the report before mentioning any of the outcomes – it just seems confusing here (vs in Methods)

Page 4 **Line n/a**

When reporting the prevalence of FAI, would it be helpful to also list the # hip arthroscopies performed annually in U.S. to show increasing incidence of this?

Page 8 **Line
Bullet points**

Only including detailed text on negative studies about association between FAI and OA seems biased. Would balance w/ Khanna et al AJSM LOE 3. Also the wylie review from JAAOS 2018 summarizes positive and negative data nicely. (tables 1 and 2).

Page 9-10

Both of these sections seem like they are missing information

BACKGROUND Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Content of literature review/background is sufficient? Could be improved, see below. The list of systematic reviews and consensus statements seems complete to my knowledge.

Page 11 **Line first para**

The first mention of hip impingement was in 1933 (Dr Elmslie) in BMJ. I had thought Ganz’s first account of FAI was found as a complication in postop PAO patients. (CORR

1999). Regardless, the CORR 1999 article is probably the seminal paper that most hip preservationists are familiar w.

Page 11 **Line third para**

Again would include both a concrete example of association between OA and FAI (such as Khanna et al) and one against rather than just the against.

Page 11 **Line fourth para**

The labrum has many functions, not just as a cushion for the joint. Would include the other functions of the labrum most notably: It seals a pressurized fluid layer to lubricate cartilage and slow rate of fluid expression from porous cartilage layers (thereby limiting cartilage deformation and stress).

Page 12 **Line lines 1-2**

The statement; “indicating that a ‘normal’ hip joint is rare” is biased. For example, the review referenced by Frank includes older patients and thus if one were to only look at patients under the age of 30 the majority of hips do not have labral tears.

Page 12 **Line section 2.3**

Most hip preservationists consider “mixed type” FAI to be a real thing and consider it to be part of the classification. We often find patients with both cam morphology and anterolateral acetabular overhang.

Additionally the authors do not anywhere in this report mention extra articular impingement such as that caused by a Type III AIIIS (subspine impingement).

Page 13 **Line section 2.4.2**

The goal of FAIS surgery is **not** to improve hip ROM. The goal is to improve patient pain and function such as allow return to sport.

Also a note -- the labrum does not need to be taken down in order to remove portions of the acetabular rim.

Also classifying this into treatment of cam and pincer/labrum as separate sections does not make a lot of sense to me. I would remove the category headings. All bone morphologies and labral tears are addressed at the time of surgery.

Arthroscopy + limited open I believe is rarely done now. Arthroscopic techniques and instruments have improved dramatically, thus I would argue that adding a limited open does not add any improved exposure these days.

Page 15 **Line para 2**

I would emphasize the Lynch 2019 document a bit more. This was created by most of the lead hip arthroscopists/preservationists in the country and offers solid advice and consensus criteria. The older studies emphasized earlier in the section seem less relevant in my opinion.

The report also needs to emphasize that hip arthroscopy is NOT a treatment for osteoarthritis. The paragraph before section 2.6 is critically important and has been proven by multiple large prospective cohorts– this is not a procedure for arthritis and should not be done in Tonnis >2 or joint space <2mm.

Page 15 **Line section 2.6**

What is meant by “loss of fixation requiring revision”. Does this refer to trochanteric osteotomy for surgical dislocation? Arthroscopy and open surgery procedures are technically very different, with different risk profiles, that it might make sense to divide complications into 2 groups: arthroscopic complications and open complications.

REPORT OBJECTIVES & KEY QUESTIONS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Aims/objectives clearly address relevant policy and clinical issue? Y
- Key questions clearly defined and adequate for achieving aims? Y (except for that one section mentioned previously where CQ#2 had too many parts to it – that seemed to have dropped off on page 37 however and it is more specific).

As mentioned previously, outcomes are not intuitive to me.

Why is range of motion (intermediate) an outcome?

Complications/adverse events are listed separately under the “safety outcomes” category but I would argue it encompasses things like: H.O., trochanteric nonunion, nerve damage, mortality,....so it is odd to split it up like this. Especially as compared to page V line 3. I think the way the primary outcomes are listed on Page V (function, pain, conversion to THA, and adverse events) makes sense and should be repeated for page iii for consistency.

On Page 44 last paragraph Adverse events is listed as a primary outcome but in many of the other tables it is listed separately as a safety outcome. I would prefer the report to stay consistent.

METHODS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Method for identifying relevant studies is adequate? Y

- Criteria for the inclusion and exclusion of studies is appropriate? **N – I question the exclusion of studies that contain revision surgery as this limits some of the higher numbered prospective cohorts.**
- Method for Level of Evidence (LoE) rating is appropriate and clearly explained? N
- Data abstraction and analysis/review are adequate? Y

Page 39 **Line table 5**

Why would asymptomatic patients undergo treatment for FAI?

Consider excluding microfracture patients or listing as a subcategory.

Do you have a list of the case series which were excluded? The concept of “focused on safety” seems subjective.

What was done about large systematic reviews / meta analyses?

RESULTS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Amount of detail presented in the results section appropriate? Y
- Key questions are answered? N
- Figures, tables and appendices clear and easy to read? N
- Implications of the major findings clearly stated? N
- Have gaps in the literature been dealt with adequately? Y
- Recommendations address limitations of literature? Y

Page 48 **Line 4.1.1**

In reviewing the RCTs listed, I would say that they all met the Warwick criteria for dx of FAI. Symptomatic hip with radiographic criteria for FAI and clinical exam confirming hip pain. The Warwick Agreement does not give specifics on these criteria. It simply says that you have to have all 3 domains.

Thus to answer the question about validation of definition, I think it is validated with prospective RCT data as following these criteria listed above, patients improved w surgical correction.

Page 79 **Line4.1.2**

I do not understand what Tonnis grading has to do with this question. In general the main outcome for FAIS correction is NOT tonnis score. Hip arthroscopy for FAIS has never been shown to prevent progression of OA. The purpose of hip arthroscopy for FAIS is to improve patient hip function and hip pain. I would not use Tonnis score as an outcome measure here.

Also I again ask why is the first part of this question in there? It seems unrelated to the second two questions.

For Table 13 – validation of the Tonnis scale has occurred in many longitudinal studies on FAI where intraoperatively you find increased chondral loss in Tonnis ≥ 2 and patients do worse clinically (to the point where it can be concluded that patients with Tonnis ≥ 2 should not have hip preservation surgery).

Page 90 **Line 4.2.1**

I think the authors are missing several comparative prospective cohorts. For example: Domb et al (AJSM 2016, A Prospective Survival Analysis of Primary and Revision Surgeries in a Large Mixed Cohort) . I understand the exclusion criteria in this report included “revision surgery” but I think this is a mistake to exclude some of these larger prospective studies in this way as they contain data with high follow up and large numbers.

For Figure 4/5 – why is short term iHOT 33 and HOSSport SOE considered low if the pooled RCTs are so favorable? (and according to page 152 the RCTs are listed w/ SOE as high).

In general, the way the results are formatted is very long and arduous to read; it is challenging to figure out the bottom line. It would be nice if there were pooled results as in the Minkara systematic review paper.

And a SR to consider including for outcomes:
<https://www.ncbi.nlm.nih.gov/pubmed/27324968>

Page 120 **Line4.3**

Biased paragraph: “given that ax is invasive while PT is not, one would not expect serious adverse events or death with PT.” Please refer to Figure 7. Complications can definitely happen in PT. For example, MI. Or as I have seen in clinical practice – shoulder dislocation, patella dislocation, hip fracture.

Additionally the development of postless traction (used widely across the country) has decreased pudendal nerve injury/labral swelling/scrotal injury/etc as there is no perineal post.

Page 140 **Line4.4**

What other categories were investigated? BMI? Baseline tonnis/joint space < 2 mm? (I think the latter is particularly relevant). Why only reviewing RCTs for this topic?

Page 144 **Line Mather 2018 & Shearer 2012**

Please try to avoid subjective statements. Why write “poor quality” in the first sentence? **Why not just list the findings and then list a QHES score at the end. There is no standardized interpretation of QHES.**

CONCLUSIONS Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Are the conclusions reached valid?

I could not find an overall “conclusions” section

OVERALL PRESENTATION and RELEVANCY Comments

While reviewing this section please keep the following questions in mind, but please comment on any point:

- Is the review well structured and organized? N
- Are the main points clearly presented? y
- Is it relevant to clinical medicine? y
- Is it important for public policy or public health? y

I believe my feedback is listed previously but to summarize main points:

- 1) Watch for biases - consider reorganization of certain sections to reflect this, as well as include a balance of literature when reporting specific examples.
- 2) Consider complications of open and arthroscopic surgery separately
- 3) Consider including extra articular FAIS
- 4) Additionally, a large intrinsic issue with FAI is that many of the questions the report is asking will never be able to be solved. For example the authors note in section 4.1.1 that despite two important manuscripts which attempt to define FAIS and set forth best practice guidelines, there is very low/insufficient evidence regarding agreed upon criteria for case-definition. This is because by nature this is a dynamic condition dependent not only on alpha/center edge angle but also on pelvic tilt, femoral and acetabular version, soft tissue laxity, and activity level. Thus there may never be a consensus on strict definition (e.g. 50 degrees versus 60 degrees for alpha angle, or that patients must have a cam or must have a cross-over sign) as it probably does not exist (hence, dynamic).

The report fails to highlight clearly the major concept which is that patients almost overwhelmingly improve after arthroscopic treatment for FAIS, as long as they do not have the exclusion criteria listed in the best practice guidelines. This is borne via multiple longitudinal analyses and has been summarized in systematic reviews of thousands of patients (Minkara systematic review). I think this should be more clearly presented.

QUALITY OF REPORT

Quality Of the Report

(Click in the gray box to make your selection)

Superior

Good

Fair

Poor

See above

We would appreciate any feedback you have on the usability of this form. Please add comments in the field below.

Form is good.

Appeal Statement (written 10/03/2019):

To whom it may concern,

I am writing to appeal the recent decision which denies me benefit of coverage for surgical treatment of femoroacetabular impingement (FAI) syndrome. I understand that the Health Technology Clinical Committee (HTCC) currently does not require Regence to cover FAI syndrome by law but considering that a re-review is currently being conducted by the HTCC of femoroacetabular impingement syndrome, I ask that you reconsider your decision and award me benefit of coverage for the above described services to correct my FAI syndrome. I have included the evidence update literature from 2018 being used by the HTCC in their current review. Outside of the HTCC review, I have personally reached out to multiple peers who have been treated with the same surgery for FAI syndrome and all have reported that their pain and function was improved and in some cases been completely restored to normal.

<https://www.hca.wa.gov/assets/program/fai-final-signals-update-20180212.pdf>

Per the **Up to Date** review entitled Approach to hip and groin pain in the athlete and active adult, under the *Femoroacetabular impingement* subsection, "If an appropriate, aggressive rehabilitation regimen fails to bring about significant improvement after two to three months, athletes may consider surgical intervention". I have experienced unbearable pain in my left hip since April 2019. I underwent extensive physical therapy () and have seen a physiatrist () with whom I tried a cortisone injection to reduce swelling caused by a labral tear, which I was informed resulted from FAI syndrome. To date, no treatment currently available to me has been effective to relieve the pain I experience due to FAI.

Given that Up to Date states, "Surgical outcomes appear to be favorable in most patients, with approximately 70 to 75 percent reporting improvement in symptoms and function" and that for the last seven months I have attempted every possible non-invasive treatment I can find to help relieve my pain without success, the next and only option left is to get the surgery proposed by my provider. Two second opinions and two Physical Therapists who see surgical outcomes have all agreed that surgery is the best and only option left.

The repair of my diagnosed FAI syndrome is extremely important to my future well-being and for my ability to live a life free of chronic pain. In fact, I have been told by three separate providers: , , and () that if left untreated, my femoroacetabular impingement (FAI) syndrome will more than likely lead to early onset osteoarthritis in my left hip and the possible need for a total hip replacement early on in my life. According to their expert opinions FAI correcting surgery becomes a preventative measure which will remediate pain in my left hip as well as prevent the need for more invasive and costly surgical procedures down the road. For seven months excruciating pain in my left hip has prevented me from leading a normal healthy lifestyle. At this point I am unable to sit for any period of time without experiencing 7-9/10 pain. I am unable to walk for any extended period of time without pain and I am certainly not able to exercise at all without experiencing 10/10 pain. I work in a very physically demanding field as a critical care nurse and FAI syndrome is increasingly preventing me from doing my job without, again, experiencing significant pain in my

left hip. Over time this syndrome will likely prevent me from being able to work in my profession long term.

Being a person working 12 hour night shifts as a Critical Care nurse, I can categorically state that unresolved bone related femoral impingement impacts my mobility and my ability to get a healthy amount of sleep, affecting both my quality of life and best care nursing practice in a hospital setting. With this continued chronic pain I don't know how I will continue in my profession as it requires for me to be on my feet walking constantly, squatting, and lifting heavy people.

Seattle surgeons pioneering FAI, and peers my age who have benefited from arthroscopic intervention have reported much satisfaction and very good outcomes; this is why I would like to receive insurance approval and coverage for Left Hip Arthroplasty, Acetabuloplasty, Femoroplasty, and Possible Labral Repair.

I am in the healthcare profession. Specifically, I work in a surgical ICU and am more than well informed about surgical procedures. I have done extensive research into my options for treating FAI syndrome. I have done everything noninvasive that I can. My goal is to be a physically fit active person. I have no interest in becoming a long term chronic pain patient, needing continual treatments and surgeries. I truly believe this surgery will save both Regence and myself money in the long term.

Thank you for your consideration,

██████████, RN