

# The Shoulder Objective Practical Assessment Tool: Evaluation of a New Tool Assessing Residents Learning in Diagnostic Shoulder Arthroscopy



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**Purpose:** To design and validate an objective practical assessment tool for diagnostic shoulder arthroscopy that would provide residents with a method to evaluate their progression in this field of surgery and to identify specific learning needs. **Methods:** We designed and evaluated the shoulder Objective Practical Assessment Tool (OPAT). The shoulder OPAT was designed by us, and scoring domains were created using a Delphi process. The shoulder OPAT was trialed by members of the British Elbow & Shoulder Society Education Committee for internal consistency and ease of use before being offered to other trainers and residents. Inter-rater reliability and intrarater reliability were calculated. One hundred forty orthopaedic residents, of varying seniority, within 5 training regions in the United Kingdom, were questioned regarding the tool. A pilot study of 6 residents was undertaken. **Results:** Internal consistency was 0.77 (standardized Cronbach  $\alpha$ ). Inter-rater reliability was 0.60, and intrarater reliability was 0.82. The Spearman correlation coefficient ( $r$ ) between the global summary score for the shoulder OPAT and the current assessment tool used in postgraduate training for orthopaedic residents undertaking diagnostic shoulder arthroscopy equaled 0.74. Of the residents, 82% agreed or strongly agreed when asked if the shoulder OPAT would be a useful tool in monitoring progression and 72% agreed or strongly agreed with the introduction of the shoulder OPAT within the orthopaedic domain. **Conclusions:** This study shows that the shoulder OPAT fulfills several aspects of reliability and validity when tested. Despite the inter-rater reliability being 0.60, we believe that the shoulder OPAT has the potential to play a role alongside the current assessment tool in the training of orthopaedic residents. **Clinical Relevance:** The shoulder OPAT can be used to assess residents during shoulder arthroscopy and has the potential for use in medical education, as well as arthroscopic skills training in the operating theater.

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The quality of orthopaedic training is increasingly challenged by the convergence of a number of issues including public expectations, European working time regulations, demands for safety, and National Health Service pressures leading to reduced overall training opportunities.<sup>1,2</sup> Currently, a United Kingdom

(UK) resident's progression is assessed by documented acquisition of competencies through workplace-based assessment (WBA) throughout the training period and formally reviewed at the Annual Review of Competence Progression meeting, in common with other specialties.<sup>1</sup> These tools are used for formative

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feedback, enabling the resident to engage with self-directed learning not only in areas in which the trainer believes there are deficiencies in performance but also in areas in which the resident has performed well.

A specific type of WBA, the procedure-based assessment (PBA), has been in mainstream use for a number of years as part of the UK intercollegiate surgical curriculum program. This assesses the resident's technical, operative, and professional skills in a range of specialty procedures or parts of procedures during routine surgical practice up to the level of certification. PBAs provide a framework to assess practice and facilitate feedback to direct learning. Diagnostic shoulder arthroscopy is used by shoulder surgeons the world over as a starting point for each operation. Moreover, diagnostic shoulder arthroscopy can be performed as a PBA within the current UK trauma and orthopaedic residents' training program. This can be used to obtain a Global Summary Rating of level 4 ("competent to perform the procedure unsupervised" and "could deal with complications that arose") for arthroscopy and simple arthroscopic procedures, which is a requirement for the acquisition of the Certificate of Completion of Training.<sup>3</sup>

The assessment process in medical education remains essentially subjective. This is more evident at the post-graduate level,<sup>4</sup> as well as in the use of the current PBA, which divides a resident's skill level into 2 coarse categories of unsatisfactory and satisfactory.

It was believed that there was a need for a training and assessment system focused on the technical skills required for a single, basic procedure. The system needed to be objective, with a measurable and definable scoring system. This would provide the ability to track progress over time. The current PBAs have an emphasis on the perioperative elements (consent, positioning, communication, and so on). Although these are important, it was believed that the component of the assessment relating to intraoperative technical skill was under-represented.

The purpose of this study was to design and validate an objective practical assessment tool for diagnostic shoulder arthroscopy that would provide residents with a method to evaluate their progression in this field of surgery and to identify specific learning needs. We hypothesized that the shoulder Objective Practical Assessment Tool (OPAT) would be a reliable and valid assessment tool for use in residents when performing diagnostic shoulder arthroscopy.

## Methods

One hundred forty residents were recruited for completion of a questionnaire comparing both the current PBA and the shoulder OPAT. Questionnaires were provided to all trainees at mandatory regional

teaching sessions. They were anonymized to achieve a greater response and more honest opinions. Six trainees were assessed by 5 trainers, all trained in using the shoulder OPAT (2 of whom were members of the British Elbow & Shoulder Society [BESS] Education Committee), for assessment of the actual use of the shoulder OPAT in clinical practice.

## Design

The shoulder OPAT for diagnostic arthroscopy was developed using a Delphi method. The Delphi method was applied by 3 surgeons (C.L.T., T.D.T., E.M.H.; including 2 members of the BESS Education Committee, experienced in performing arthroscopic shoulder surgery and in teaching and assessing orthopaedic residents). This method consisted of identification of anatomic structures and key aspects required in the performance of a diagnostic shoulder arthroscopy documented in the literature (including the trauma and orthopaedic curriculum for UK residents). The resultant list was then edited by the 3 surgeons to remove any redundancy. With the constituent aspects of surface marking, examination under anesthesia, introduction of an arthroscope,

| <i>Examination under anesthesia (EUA) [Max. score 3]</i>               |  |
|--|--|
| <b>E1</b>  | Performs EUA                                   |
| <i>Procedural Standards [Max. score 12]</i>                            |  |
| <b>P1</b>  | Identifies anatomical landmarks                |
| <b>P2</b>  | Introduces arthroscope into glenohumeral joint |
| <b>P3</b>  | Respects articular surfaces                    |
| <b>P4</b>  | Proceeds in logical fashion                    |
| <i>Glenohumeral Joint (GHJ) [Max. score 29 – viewed ; 45 – probed]</i> |  |
| <b>GH1</b>   | Long Head of Biceps                            |
| <b>GH2</b>   | Subscapularis                                  |
| <b>GH3</b>   | Superior Gleno Humeral Ligament (SGHL)         |
| <b>GH4</b>   | Middle Gleno Humeral Ligament (MGHL)           |
| <b>GH5</b>   | Inferior Gleno Humeral Ligament (IGHL)         |
| <b>GH6</b>   | Labrum   |
| <b>GH7</b>   | Glenoid Articular Surface                      |
| <b>GH8</b>   | Humeral Articular Surface                      |
| <b>GH9</b>   | Supraspinatus                                  |
| <b>GH10</b>  | Bare Area                                      |
| <b>GH11</b>  | Inferior Recess                                |
| <b>GH12</b>  | Subscapular Recess                             |
| <i>Subacromial bursa (B) [Max. score 18]</i>                           |  |
| <b>B1</b>  | Introduces arthroscope into bursa              |
| <b>B2</b>  | Horizontal needle / lateral portal             |
| <b>B3</b>  | Coraco-Acromial Ligament                       |
| <b>B4</b>  | Anterior and Lateral Acromion                  |
| <b>B5</b>  | Inspection of Bursal Surface of Rotator Cuff   |

**Fig 1.** Domains and assessment criteria with maximum (Max) scores available.

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