***Risk of bias tables by the Risk of Bias Assessment tool for Non-randomized Studies (RoBANS)***

***Athwal 2015***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Unclear risk | This study is a retrospective comparative study between standard implant and bony increased-offset (BIO) reverse shoulder arthroplasty. Analysis of relationship between scapular notching and clinical outcomes was performed for sub-analysis regardless of implant difference. Therefore, this comparison has a possibility to be affected by a confounding effect of implant difference, because each cohort was constructed regarding implant factor (standard vs. BIO). Because scapular notching was significantly different between two cohorts (standard vs BIO) (P = .022), there is a possibility that implant design can be a confounding factor of relationship between scapular notching and clinical outcome. However, considering the fact that clinical outcomes were not different between two cohorts (table I), its confounding effect could be minimal or little. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in analysis. |
| Measurement of exposure | Low risk | All data were obtained from medical records and from standard radiographs evaluated by researchers with credentials („The radiographs were reviewed independently by 2 fellowship-trained shoulder surgeons who were uninvolved with the primary surgical procedures (K.M.R. and J.P.M.)") |
| Blinding of outcome assessments | Low risk | Although blinding was not disclosed in the manuscript, the risk is anticipated to be low because standardized protocol of measuring outcome scales was used and evaluated by experienced research coordinator, using validated devices. |
| Incomplete outcome data | Low risk | There were no missing data. („All patients returned for follow-up specifically for this study.") |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Bigorre 2014***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in analysis. |
| Measurement of exposure | Low risk | All data were evaluated by standardized scoring system. And radiologic evaluation were validated by additional protocol. („a fluoroscopic image of the baseplate of the glenosphere was performed by X-ray technicians before performing the X-ray.") |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk is anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | There were no missing data. („There were no lost to follow-up patients at 2 years.") |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols |

***Boileau 2006***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Evaluation was performed by an independent observer. („Other strengths include examination by independent observers") |
| Incomplete outcome data | Low risk | Missing data was minimal. („Other strengths include examination by independent observers, minimal loss to follow-up.") |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Erbstbbrunner 2017***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system with validation. |
| Blinding of outcome assessments | Low risk | Independent observers and blinded surgeons evaluated clinical and radiologic variables. |
| Incomplete outcome data | Low risk | Follow-up loss was 26%, but addition confirmation using medical record or telephone interview was done. [„At the time of final follow-up, 3 patients (12%) had died and 3 (12%) had been lost to follow-up. None of these patients had any complications or revision surgery as confirmed by institutional records or telephone."] |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Favard 2011***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in analysis. |
| Measurement of exposure | Low risk | All data were evaluated by standardized scoring system, and radiologic evaluation was performed by researchers with credentials. („It should be emphasized, however, that the radiographs were analyzed by a surgeon with substantial experience in the classification of notching.") |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Missing date were small („12 patients died before 2 years' follow-up; all had the prosthesis in place at the time of death. Five were lost to follow-up before 2 years."), and causes of missing was irrelevant with the outcome. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Feeley 2014***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were evaluated by standardized scoring system, and radiologic evaluation was validated. [„Radiographic measures were assessed. The kappa for notching grade was 0.84 (P = 0.02)."] |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Missing data was not large, and it can be anticipated that missing would not affect the outcome. („There are several weaknesses to this study. This is a retrospective review with a 10% of patients lost to follow-up. This can lead to detection bias and alter our findings, but our rate of patients lost to follow-up is consistent with other RTSA studies in the literature.") |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols |

***Katz 2016***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | Unclear risk | Possible confounding variables (preoperative functional scores and range of motion) were analyzed and confirmed to have no significant difference between two groups (notching vs. non-notching) except for active flexion and active abduction. But implant change in study period can have a possibility of having confounding effects. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although blinding was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | There were no missing data. („Patients were systematically reviewed every year by their surgeon. Those who had no clinical evaluation in 2014 were asked to return for clinical assessment by one of the senior authors.") |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Kerzner 2018***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Unclear risk | This study was a retrospective comparative study between standard implant and bony increased-offset (BIO) reverse shoulder arthroplasty. Analysis of relationship between scapular notching and clinical outcomes was performed for sub-analysis regardless of implant difference. Therefore, this comparison has a possibility to be affected a confounding effect of implant difference, because each cohort was constructed regarding implant factor (standard vs. BIO). |
| Confounding variables | High risk | BIO-RSA cohort showed better clinical outcome scores than standard RSA cohort with significance. And, BIO-RSA cohort had lower rate of scapular notching. This means that implant factor can confound the comparison of clinical outcome after RSA between notching and non-notching groups. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | The rate of follow-up loss was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Levigne 2008***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. („The standard protocol was to use fluoroscopic control to ensure that the flat side of the hemispheric glenoid implant appeared flat on the AP view.") |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | The rate of follow-up loss was 26 %. However, this may not be related to the study outcome. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Levigne 2011***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | The rate of follow-up loss was 13.5 %. However, this may be unrelated with the study outcome. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Mizuno 2012***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period by single surgeon were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. („All radiographs were obtained under fluoroscopic control using Lévigne's protocol.") |
| Blinding of outcome assessments | Low risk | Outcome measurements were performed by an independent observer. („At each time point an independent observer assessed active range of motion") |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Mollon 2017***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period in a single center were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | Low risk | Other baseline factors which can affect clinical outcomes after RTSA were considered before analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Pastor 2018***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Unclear risk | This study was a retrospective case series for treatment study, which included patients received reverse arthroplasty for the diagnosis of fracture sequalae. Comparison of clinical outcomes between patients with and without scapular notching was done as sub-analysis. Confounding effect of the etiology of fracture sequelae on relationship between scapular notching and clinical outcomes is not clear. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Sadoghi 2011***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period by single surgeon were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Sershon 2014***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period by single surgeon were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Follow-up loss rate was 14% (6/42). The cause of follow-up loss may not be related with outcomes. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Simovitch 2007***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period by single surgeon were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Simovitch 2019***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | Low risk | Other baseline factors which can affect clinical outcomes after RTSA were considered and confirmed identical between two groups before analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Sirveaux 2004***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients in designated time period were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other baseline factors which can affect clinical outcomes after RTSA were considered and confirmed identical between two groups before analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Follow-up loss rate was 13% (12/92), and the cause of follow-up loss may not be related with outcomes. („Six patients were lost to clinical and radiological review and six had died with the prosthesis in place.") |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Stechel 2010***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Follow-up loss rate was small. (9 out of 68 cases) The cause was not related with outcomes. [„9 patients did not show up for follow–up because of living too far away (3) or because they were satisfied with the result and did not see any reason for a repeat examination (2). 1 patient was dissatisfied and had undergone further surgery, and 3 could not be reached."] |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Torrens 2013***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Unclear risk | Follow-up loss rate was not disclosed. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Torrens 2016***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Unclear risk | This study was a prospective comparative study between two glenosphere diameter (38 mm vs. 42 mm) reverse shoulder arthroplasty. Analysis of relationship between scapular notching and clinical outcomes was performed for sub-analysis regardless of glenosphere diameter difference. Therefore, this comparison has a possibility to be affected a confounding effect of implant difference, because each cohort was constructed regarding implant factor. Since scapular notching was significantly different between two cohorts (38 mm vs. 42 mm) (P < .001), there is a possibility that implant design can be a confounding factor of relationship between scapular notching and clinical outcome. However, considering the fact that clinical outcomes were not different between two cohorts its confounding effect could be minimal or little. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Follow-up loss rate was small (8 out of 89 patients) and unrelated to outcomes. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Torrens 2019***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Unclear risk | This study was a prospective comparative study between two implant choices (a 42-mm glenosphere without eccentricity vs. 38-mm with eccentricity). Analysis of relationship between scapular notching and clinical outcomes was performed for sub-analysis regardless of implant choice. Therefore, this comparison has a possibility to be affected a confounding effect of implant difference, because each cohort was constructed regarding implant factor. However, since scapular notching rate was not significantly different between two cohorts (P = .07) and clinical outcomes were not different between two cohorts, its confounding effect could be minimal or little. |
| Confounding variables | Low risk | Other baseline factors which can affect clinical outcomes after RTSA were considered and confirmed identical between two groups before analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Follow-up loss rate was small (12 out of 95 patients) and unrelated to outcomes. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

***Werner 2005***

Risk of bias table

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Selection of participants | Low risk | Consecutive patients were all reviewed and selected by clear inclusion and exclusion criteria. |
| Confounding variables | High risk | Other factors which can affect clinical outcomes after RTSA were not considered in the analysis. |
| Measurement of exposure | Low risk | All data were obtained by standardized scoring system and radiologic evaluation system. |
| Blinding of outcome assessments | Low risk | Although whether blinding of outcome assessments was not disclosed in the manuscript, the risk was anticipated to be low because standardized protocol of measuring outcome scales was used. |
| Incomplete outcome data | Low risk | Follow-up loss rate was small (8 out of 58 patients) and unrelated to outcomes. |
| Selective outcome reporting | Low risk | Most of the expected outcomes were included even without the protocols. |

**Appendix 2. Property of studies**

| | Study design | Country | Enrollment | Inclusion criteria | Exclusion criteria | Patients (no.)* | Notching rate | Age (y) | Minimum follow-up (y) | Follow-up (mo) | Implant Name | Glenoid tilting | Glenoid eccentrity | Glenoid lateralization | Glenosphere diameter | NSA | Humerus version | Humerus lateralization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sirveaux, 2004** | Sub-analysis of prospective case series | France | 1991-1999 consecutive | Patients with osteoarthritis with a massive and irreparable rupture of the rotator cuff | Loss of follow up | A: 49<br>B: 28 | 0.64 | 73 (60-86) | 2 | 44.5 (24-97) | Delta | n.s | n.s | - | 36mm: 72<br>42mm: 8 | n.s | n.s | - |
| **Werner, 2005** | Sub-analysis of prospective case series | Swiss | consecutive in single center | Patients with painful pseudoparesis caused by a massive irreparable rotator cuff tear | Loss of follow up | A: 46<br>B: 2 | 0.96 | 68 (44-84) | 2 | 38 | Delta | - | + | - | 36mm: 56<br>42mm: 2 | n.s | 0-20 retroversion | - |
| **Boileau, 2006** | Sub-analysis of prospective case series | France | 1997-2001 consecutive by one surgeon | #1. Massive and irreparable cuff tear arthropathy<br>#2. Sequelae of a proximal humeral fracture<br>#3. Revision after arthroplasty | #1. Loss of follow up<br>#2. Patients who RSA after tumor excision | A: 26<br>B: 19 | 0.58 | 72 | 2 | 40 (24-72) | Delta | - | - | - | 36mm: 41<br>42mm: 4 | 155 | 20-30 retroversion | - |
| **Simovitch, 2007** | **Sub-analysis of prospective case series** | **USA** | **1995-2003 single surgeon** | **#1. Painful cuff tear arthropathy<br>#2. Irrepairable rotator cuff tear with pseudoparesis** | **#1. Revision arthroplasty, acute fracture, posttraumatic deformity, posttraumatic arthritis<br>#2. previous or concurrent glenoid fracture or glenoid bone-grafting** | **A: 34<br>B: 43** | **0.44** | **71** | **2** | **34** | **Delta** | **-** | **-** | **-** | **36mm : 76<br>42mm : 1** | **n.s** | **0-20 retroversion** | **-** |

(*Continued*)

**Appendix 2. Property of studies (*Continued*)**

| | Study design | Country | Enrollment | Inclusion criteria | Exclusion criteria | Patients (no.)* | Notching rate | Age (y) | Minimum follow-up (y) | Follow-up (mo) | Implant Name | Glenoid tilting | Glenoid eccentrity | Glenoid lateralization | Glenosphere diameter | NSA | Humerus version | Humerus lateralization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Levigne, 2008** | Sub-analysis of retrospective case series | France | 1991-2003 consecutive four centers | Patients who received RSA | #1. Revision arthroplasty #2. Loss of follow up | A: 210 B: 127 | 0.62 | 72 (18-87) | 2 | 47 (24-120) | Delta (291) Aequalis (46) | n.s | n.s | - | 36mm: 320 42mm: 17 | ns. | n.s | - |
| **Stechel, 2010** | Sub-analysis of prospective case series | Germany | 2002-2007 consecutive four centers | #1. Cuff tear arthropathy #2. Fracture sequelae #3. Revision of a conventional prosthesis | Loss of follow up | A: 51 B: 8 | 0.86 | 70 (60-82) | 2 | 48 (24-84) | Delta | n.s | n.s | n.s | n.s | n.s | n.s | n.s |
| **Favard, 2011** | Sub-analysis of retrospective case series | France | 1985-2003 consecutive multicenter | Patients who received RSA | Loss of follow up | A: 4 B: 36 | 0.90 | 73 (40-90) | 9 | 54 | Delta (461) Aequalis (66) | various | various | - | n.s | n.s | n.s | - |
| **Levigne, 2011** | Sub-analysis of retrospective case series | France | 1987-2003 consecutive multicenter | #1. Cuff tear arthropathy #2. Osteoarthritis with cuff deficiency | Loss of follow up | A: 312 B: 149 | 0.68 | 73 (40-90) | 2 | 51 (24-206) | Delta (401) Aequalis (60) | n.s | n.s | - | 36mm: 392 42mm: 69 | 155 | n.s | - |
| **Sadoghi, 2011** | Sub-analysis of prospective case series | Germany | 2002-2007 consecutive single surgeon | Patients with massive rotator cuff tear, and with pseudoparesis | #1. Loss of follow up #2. Acute fractures, trauma, or revision arthroplasty | A: 21 B: 39 | 0.35 | 67 (56-84) | 2 | 45 (24-96) | Delta | - | - | - | 36mm: 56 42mm: 2 | n.s | 0-20 retroversion | - |
| **Mizuno, 2012** | Sub-analysis of retrospective case series | France | 2006-2008 consecutive single surgeon | Patients who receive RSA with an eccentric glenosphere component | #1. Loss of follow up #2. The use of a concentric glenosphere | A: 19 B: 28 | 0.40 | 74 (50-84) | 2 | 30 (24-49) | Aequalis | + | + | - | 36mm: 39 36mm: 4 | 155 | 0-20 retroversion | - |

(*Continued*)

**Appendix 2. Property of studies (*Continued*)**

| | Study design | Country | Enrollment | Inclusion criteria | Exclusion criteria | Patients (no.)* | Notching rate | Age (y) | Minimum follow-up (y) | Follow-up (mo) | Implant Name | Glenoid tilting | Glenoid eccentrity | Glenoid lateralization | Glenosphere diameter | NSA | Humerus version | Humerus lateralization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Torrens, 2013** | Sub-analysis of retrospective case series | Spain | consecutive | Patients who received RSA | Loss of follow up | A: 13<br>B: 23 | 0.36 | 75 (66-84) | 2 | 40 (24-72) | Delta | - | + (17)<br>- (19) | - | n.s | n.s | n.s | - |
| **Bigorre, 2014** | Sub-analysis of retrospective case series | France | 1998-2008 consecutive | Patients who received RSA | Revision arthoplasty | A: 59<br>B: 58 | 0.50 | 73 | 2 | n.s | Delta | n.s | n.s | - | 36mm | n.s | n.s | - |
| **Feeley, 2014** | Sub-analysis of prospective case series | USA | 2007-2011 consecutive single center two surgeons | #1. Patients who received RSA<br>#2. A minimum of 2 years radiographic follow-up.<br>#3. Preoperative and postoperative radiographic evaluations with acceptable radiographs | #1. Loss of follow up<br>#2. Significant glenoid bone loss requiring bone grafting | A: 15<br>B: 39 | 0.30 | 67±14.1 | 2 | 30 (24-60) | Zimmer Reverse Trabecular Metal System | + | - | + | 28 or 36mm | ◘ | 10-20° of retroversion. | - |
| **Sershon, 2014** | Sub-analysis of retrospective case series | USA | 2007-2009 consecutive single center | Patients who received RSA in age younger than 60 years | Loss of follow up | A: 6<br>B: 27 | 0.18 | 54.4 (39-59.9) | 2 | 34 (24-48) | n.s | n.s | n.s | n.s | n.s | n.s | n.s | n.s |

(*Continued*)

**Appendix 2. Property of studies (*Continued*)**

| | Study design | Country | Enrollment | Inclusion criteria | Exclusion criteria | Patients (no.)* | Notching rate | Age (y) | Minimum follow-up (y) | Follow-up (mo) | Implant Name | Glenoid tilting | Glenoid eccentrity | Glenoid lateralization | Glenosphere diameter | NSA | Humerus version | Humerus lateralization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Athwal, 2015** | Sub-analysis of retrospective cohort comparison | Canada | n.s | #1. Patients who received RSA<br>#2. Age between 65 and 85 years | #1. Rheumatoid and/or inflammatory arthritis<br>#2. Osteoarthritis<br>#3. Fracture, nonunion, malunion<br>#4. Prior open shoulder surgery<br>#5. Humeral or glenoid bone loss<br>#6. Workers' compensation claims, and unresolved litigation | A: 23<br>B: 17 | 0.58 | A: 74<br>B: 75 | 2 | A: 34<br>B: 34 | Aequalis | - | - | Grammont : 18<br>BIO (10mm): 18 | 36mm : 28<br>42mm : 12 | n.s | n.s | - |
| **Katz, 2016** | Sub-analysis of retrospective case series | France | 2003-2012<br>4 surgeon in 4 different centers | Patients with pseudoparalysis due to massive irreparable rotator cuff tear | #1. Posttraumatic arthritis<br>#2. Primary osteoarthritis with no rotator cuff tear,<br>#3. Rheumatoid arthritis<br>#4. Chronic dislocation<br>#5. Revision RTSA | A: 41<br>B: 99 | 0.29 | 72 | 2 | 45 | Arrow | + | - | + | 36mm : 116 | 155 | 10-20 retroversion | + |
| **Torrens, 2016** | Sub-analysis of prospective randomized controlled trial | Spain | 2012-2012<br>single center, single surgeon | Patients who received RSA for a cuff-deficient shoulder, an acute fracture, and fracture sequelae | #1. Revision RSA<br>#2. Fracture sequelae | A: 26<br>B: 55 | 0.32 | 76 | 2 | 24 | Delta | - | - | - | 38mm: 43<br>42mm: 38 | 155 | 0 retroversion | + |

(*Continued*)

**Appendix 2. Property of studies (*Continued*)**

| | Study design | Country | Enrollment | Inclusion criteria | Exclusion criteria | Patients (no.)* | Notching rate | Age (y) | Minimum follow-up (y) | Follow-up (mo) | Implant Name | Glenoid tilting | Glenoid eccentrity | Glenoid lateralization | Glenosphere diameter | NSA | Humerus version | Humerus lateralization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Erbstbbrunner, 2017** | Sub-analysis of prospective case series | Swiss | 1997-2008 consecutive single center | Patients who received RSA for a massive, irreparable rotator cuff tear and pseudoparalysis | Loss of follow up | A: 20<br>B: 3 | 0.87 | 57<br>(47-59) | 8 | 140<br>(96-228) | Delta: 14<br>Anatomical Shoulder Reverse prosthesis : 9 | n.s | n.s | - | 36 mm: 18<br>40 mm : 4<br>42 mm : 1 | n.s | n.s | - |
| **Mollon, 2017** | Retrospective cohort comparison | USA | 2007-2014 consecutive single center | Patients who received RSA | #1. History of previous surgery or previous arthroplasty<br>#2. Infection or acute proximal fracture | A: 48<br>B: 428 | 0.10 | A: 72.6<br>B: 72.4 | 2 | A: 46.1<br>B: 37 | Equinoxe | - | - | - | 36mm: 266<br>42mm: 200<br>46mm: 10 | 145 | n.s | + |
| **Kirzner, 2018** | Sub-analysis of prospective cohort comparison | Australia | 2013-2016 consecutive single surgeon | Patients who received either a standard RSA or BIO-RSA | Patients with preoperative acromial abnormalities | A: 21<br>B: 19 | 0.53 | A: 72.3<br>B: 77.4 | 1 | 20 | Aequalis | - | - | Grammont : 22<br>BIO (10mm): 18 | n.s | 155 | n.s | - |
| **Pastor, 2018** | Sub-analysis of retrospective case series | Germany | 2006-2013 consecutive single surgeon | Patients who received RSA for chronic fracture sequalae | Loss of follow up | A: 25<br>B: 21 | 0.54 | 74 ± 8.6 | 2 | 54 ± 20 | Delta Xtend: 39<br>LIMA: 1<br>Delta CTA prosthesis: 6 | n.s | n.s | n.s | n.s | n.s | n.s | n.s |
| **Simovitch, 2019** | Retrospective cohort comparison | USA | 2007-2019 consecutive multi-center | Patients who received RSA | #1. Revision RSA<br>#2. History of infection<br>#3. Acute fracture and fracture sequalae | A: 47<br>B: 277 | 0.15 | A: 72.2<br>B: 72.0 | 5 | A: 77<br>B: 74.8 | Equinoxe | - | + | - | 36mm: 194<br>42mm: 109<br>46mm: 12 | 145 | n.s | + |

(*Continued*)

**Appendix 2. Property of studies (*Continued*)**

| | Study design | Country | Enrollment | Inclusion criteria | Exclusion criteria | Patients (no.)* | Notching rate | Age (y) | Minimum follow-up (y) | Follow-up (mo) | Implant Name | Glenoid tilting | Glenoid eccentrity | Glenoid lateralization | Glenosphere diameter | NSA | Humerus version | Humerus lateralization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Torrens, 2019** | Sub-analysis of prospective randomized controlled trial | Spain | 2014-2016 single center, single surgeon | #1. Patients who received RSA for a cuff-deficient shoulder, an acute fracture, or fracture sequelae | #1. Revision RSA #2. Fracture sequelae | A: 21 B: 61 | 0.26 | 75 | 2 | 24 | Delta | - | + : 44 -: 38 | - | 38mm: 44 42mm: 38 | 155 | 0 | - |

* A = notching group; B = non-notching group
RSA = reverse shoulder arthroplasty; NSA = neck shaft angle of humeral component; n.s = not specified
Data in parenthesis is a range of the variable
Mean ± Standard deviation