



## Supplementary Material

10.1302/2633-1462.28.BJO-2021-0092.R1

### Supplementary Material I. Search strategy used for database search.

#### Database I: HDAS MEDLINE <2001 to present>

1	Medline	("revision shoulder arthroplasty").ti,ab
2	Medline	"ARTHROPLASTY, REPLACEMENT, SHOULDER"/
3	Medline	(revis*).ti,ab
4	Medline	(2 AND 3)
5	Medline	(1 OR 4)
6	Medline	POSTOPERATIVE COMPLICATIONS/
7	Medline	(complicat*).ti,ab
8	Medline	(6 OR 7)
9	Medline	(5 AND 8)

#### Database II: HDAS EMBASE <2001 to present>

1	EMBASE	("revision shoulder arthroplasty").ti,ab
2	EMBASE	exp *"SHOULDER ARTHROPLASTY"/
3	EMBASE	(revis*).ti,ab
4	EMBASE	(2 AND 3)
5	EMBASE	(1 OR 4)
6	EMBASE	exp "POSTOPERATIVE COMPLICATION"/
7	EMBASE	(complicat*).ti,ab
8	EMBASE	(6 OR 7)
9	EMBASE	(5 AND 8)



<b>Wagner et al 2017</b> <sup>97</sup>	38	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	7	3
<b>Budge et al 2013</b> <sup>32</sup>	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1
<b>Padegimas et al 2017</b> <sup>123</sup>	117	8	1	2	1	3	2	0	0	0	0	0	0	2	0	0	0	19
<b>Hsu et al 2016</b> <sup>133</sup>	55	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	6
<b>Postacchini et al 2012</b> <sup>77</sup>	16	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<b>Grosso et al 2012</b> <sup>120</sup>	17	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<b>Wagner et al 2015</b> <sup>96</sup>	36	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	-	3
<b>Thangarajah et al 2019</b> <sup>124</sup>	22	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Hoffelner et al 2014</b> <sup>55</sup>	11	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
<b>Geervilet et al 2019</b> <sup>127</sup>	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Dezfuli et al 2016</b> <sup>46</sup>	12	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
<b>Natera et al 2016</b> <sup>71</sup>	23	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
<b>Valenti et al 2014</b> <sup>94</sup>	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Castagna et al 2013</b> <sup>34</sup>	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Muh et al 2013</b> <sup>128</sup>	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Schubkegel et al 2014</b> <sup>83</sup>	14	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Waiter et al 2015</b> <sup>103</sup>	44	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<b>Stephens et al 2015</b> <sup>88</sup>	32	1	0	0	4	0	0	1	0	0	0	0	0	0	0	0	1	2
<b>Sperling et al 2005</b> <sup>134</sup>	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
<b>Levy et al 2007</b> <sup>66</sup>	29	3	1	1	1	0	0	0	0	0	0	0	1	0	1	0	0	6
<b>Patel et al 2012</b> <sup>76</sup>	28	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3
<b>Abdel et al 2013</b> <sup>23</sup>	33	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Chacon et al 2009</b> <sup>35</sup>	25	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Carroll et al 2004</b> <sup>33</sup>	16	0	2	1	0	0	0	0	0	0	0	0	0	0	1	1	0	5
<b>Sassoon et al 2012</b> <sup>81</sup>	68	11	1	5	4	4	2	0	3	0	0	0	0	0	3	0	0	15
<b>Rhee et al 2011</b> <sup>78</sup>	34	12	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3
<b>Hatrup et al 2009</b> <sup>53</sup>	17	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	2
<b>Klatte et al 2013</b> <sup>135</sup>	26	2	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	7
<b>Sabesan et al 2011</b> <sup>79</sup>	17	5	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	7
<b>Levy et al 2007</b> <sup>65</sup>	19	0	2	1	2	0	1	1	0	0	0	0	0	0	2	0	0	6
<b>Holschen et al 2018</b> <sup>59</sup>	28	2	1	2	3	0	0	0	0	0	1	0	0	0	0	0	0	7
<b>Hartel et al 2015</b> <sup>52</sup>	19	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>Streubel et al 2016</b> <sup>89</sup>	11	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
<b>Gohlke et al 2007</b> <sup>50</sup>	25	3	1	1	1	0	0	0	0	0	0	1	0	0	1	0	0	6
<b>Mileti et al 2004</b> <sup>136</sup>	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Antuna et al 2001</b> <sup>27</sup>	48	3	0	0	2	1	3	0	1	0	0	0	0	0	0	0	1	9
<b>Groh et al 2011</b> <sup>51</sup>	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Ghijssels et al 2013</b> <sup>137</sup>	13	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Ince et al 2005</b> <sup>138</sup>	9	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3
<b>Cheung et al 2007</b> <sup>36</sup>	12	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2
<b>Cuff et al 2008</b> <sup>43</sup>	17	1	2	0	2	0	0	0	0	0	0	0	0	0	1	0	0	4
<b>Johnston et al 2012</b> <sup>61</sup>	13	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Sanchez-Sotelo et al 2003</b> <sup>80</sup>	33	12	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	15
<b>Pellegrini et al 2019</b> <sup>129</sup>	30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Grubhofer et al 2017</b> <sup>106</sup>	48	3	2	2	2	0	0	5	6	0	2	0	0	0	0	0	0	18
<b>Andersen et al 2013</b> <sup>115</sup>	19	1	2	0	2	0	0	1	0	0	0	1	0	0	0	0	0	3
<b>Ortmeier et al 2014</b> <sup>72</sup>	18	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
<b>Crosby et al 2015</b> <sup>42</sup>	73	2	1	2	0	0	3	0	0	0	0	1	0	0	0	0	0	0
<b>Elhassan et al 2008</b> <sup>105</sup>	21	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
<b>Thiel et al 2011</b> <sup>114</sup>	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Scalise et al 2008</b> <sup>82</sup>	11	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
<b>Jawa et al 2011</b> <sup>139</sup>	28	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	6
<b>Wilde et al 2001</b> <sup>44</sup>	4	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<b>Franke et al 2021</b> <sup>119</sup>	123	1	14	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Gaeremynck et al 2019</b> <sup>126</sup>	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Gorman II et al 2020</b> <sup>125</sup>	98	2	5	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0
<b>Franke et al 2020</b> <sup>118</sup>	114	3	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Sheth et al 2020</b> <sup>140</sup>	17	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0

BF, Baseplate failure; FS, Fracture sequelae; GF, Glenoid failure; HM, Haematoma; IC, intraoperative complication; IN, Instability; INF, Infection; LS, Loosening; NI, Nerve injuries; NS, Not specified; OT, Others; PF, Periprosthetic

fracture; RA, Radiological complications; RF, Rotator cuff failure; RP, Reoperations; SP, Pain and stiffness; SZ (N), Sample size; WO, Wound problems.

## Supplementary Material II. MINORS score for individual studies.

### Assessment items

- 1) A clearly stated aim
- 2) Inclusion of consecutive patients
- 3) Prospective collection of data
- 4) Endpoints appropriate to the aim of the study
- 5) Unbiased assessment of the study endpoint
- 6) Follow-up period appropriate to the aim of the study
- 7) Loss to follow-up less than 5%
- 8) Prospective calculation of study size

*Additional criteria in the case of comparative studies*

- 9) An adequate control group
- 10) Contemporary groups
- 11) Baseline equivalence of groups
- 12) Adequate statistical analyses

**Table ii. Score.**

Study	Evidence level	Assessment items												Total	
		1	2	3	4	5	6	7	8	9	10	11	12		
Sheth et al 2019 <sup>86</sup>	IV	2	2	2	2	2	2	2	2	2					16
Cox et al 2019 <sup>40</sup>	IV	2	2	2	2	2	2	2	2						16
Jaiswal et al 2019 <sup>60</sup>	IV	2	2	2	2	2	2	2	2						16
Tseng et al 2019 <sup>91</sup>	III	2	2	2	2	2	2	2	2	2	2	2	2	2	24
Mahylis et al 2019 <sup>67</sup>	III	2	2	2	2	2	2	2	2	2	2	2	2	2	24
Wagner et al 2018 <sup>95</sup>	IV	2	2	2	2	2	2	2	2						16
Sheth et al 2018 <sup>85</sup>	IV	2	2	2	2	2	2	2	2						16
Merolla et al 2018 <sup>70</sup>	IV	2	2	2	2	2	2	2	2						16
Ozgur et al 2017 <sup>75</sup>	IV	1	1	2	2	2	2	2	0						12
Crosby et al 2017 <sup>41</sup>	III	2	2	2	2	2	2	1	2	2	2	1	2	2	22
Hernandez et al 2017 <sup>54</sup>	IV	2	2	2	2	2	2	2	2						16
Holschen et al 2017 <sup>58</sup>	IV	2	2	2	2	2	2	2	2						16





<b>Abdel et al 2013<sup>23</sup></b>	IV	2	2	2	2	2	2	2	2	2	2	2	2	2	16
<b>Chacon et al 2009<sup>35</sup></b>	IV	2	2	2	2	2	2	2	2	2	2	2	2	2	16
<b>Carroll et al 2004<sup>33</sup></b>	IV	2	2	2	2	2	2	2	1	2					15
<b>Sassoon et al 2012<sup>81</sup></b>	III	2	2	2	2	2	2	2	2	2	2	2	1	2	23
<b>Rhee et al 2011<sup>78</sup></b>	IV	2	2	2	2	2	2	2	2	2	2	2	2	2	16
<b>Hattrup et al 2009<sup>53</sup></b>	IV	2	2	2	2	2	2	2	1	2					15
<b>Klatte et al 2013<sup>135</sup></b>	IV	2	2	2	2	2	2	2	1	2					15
<b>Sabesan et al 2011<sup>79</sup></b>	IV	2	2	2	2	2	2	2	2	2					16
<b>Levy et al 2007<sup>65</sup></b>	IV	2	2	2	2	2	2	2	2	2					16
<b>Holschen et al 2018<sup>59</sup></b>	IV	2	2	2	2	2	2	2	2	2					16
<b>Hartel et al 2015<sup>52</sup></b>	III	0	2	2	2	2	2	1	2	2	2	0	2	2	19
<b>Streubel et al 2016<sup>89</sup></b>	IV	2	2	2	2	2	2	1	2						15
<b>Gohlke et al 2007<sup>50</sup></b>	IV	2	2	2	2	2	2	1	0						13
<b>Mileti et al 2004<sup>136</sup></b>	IV	2	2	2	2	2	2	2	1						15
<b>Antuna et al 2001<sup>27</sup></b>	IV	2	2	2	2	2	2	1	2						15
<b>Groh et al 2011<sup>51</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Ghijsselings et al 2013<sup>137</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Ince et al 2005<sup>138</sup></b>	IV	1	1	2	2	2	2	2	2						14
<b>Cheung et al 2007<sup>36</sup></b>	IV	1	2	2	2	2	2	2	2						15
<b>Cuff et al 2008<sup>43</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Johnston et al 2012<sup>61</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Sanchez-Sotelo et al 2003<sup>80</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Pellegrini et al 2019<sup>129</sup></b>	III	1	2	2	2	2	2	1	2	2	2	1	2	2	21
<b>Grubhofer et al 2017<sup>106</sup></b>	III	2	2	2	2	2	2	1	2	2	2	1	2	2	22
<b>Andersen et al 2013<sup>115</sup></b>	III	2	2	2	2	2	2	2	2	2	2	0	1	2	21
<b>Ortmeier et al 2014<sup>72</sup></b>	IV	1	2	2	2	2	2	2	2						15
<b>Crosby et al 2015<sup>42</sup></b>	III	2	2	2	2	2	0	2	2	2	2	1	2	2	21
<b>Elhassan et al 2008<sup>105</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Thiel et al 2011<sup>114</sup></b>	IV	2	2	2	2	2	2	1	2						15
<b>Scalise et al 2008<sup>82</sup></b>	IV	2	2	2	2	2	2	1	2						15
<b>Jawa et al 2011<sup>139</sup></b>	IV	2	2	2	2	2	2	2	2						16
<b>Wilde et al 2001<sup>44</sup></b>	IV	0	2	2	2	2	2	1	2						13

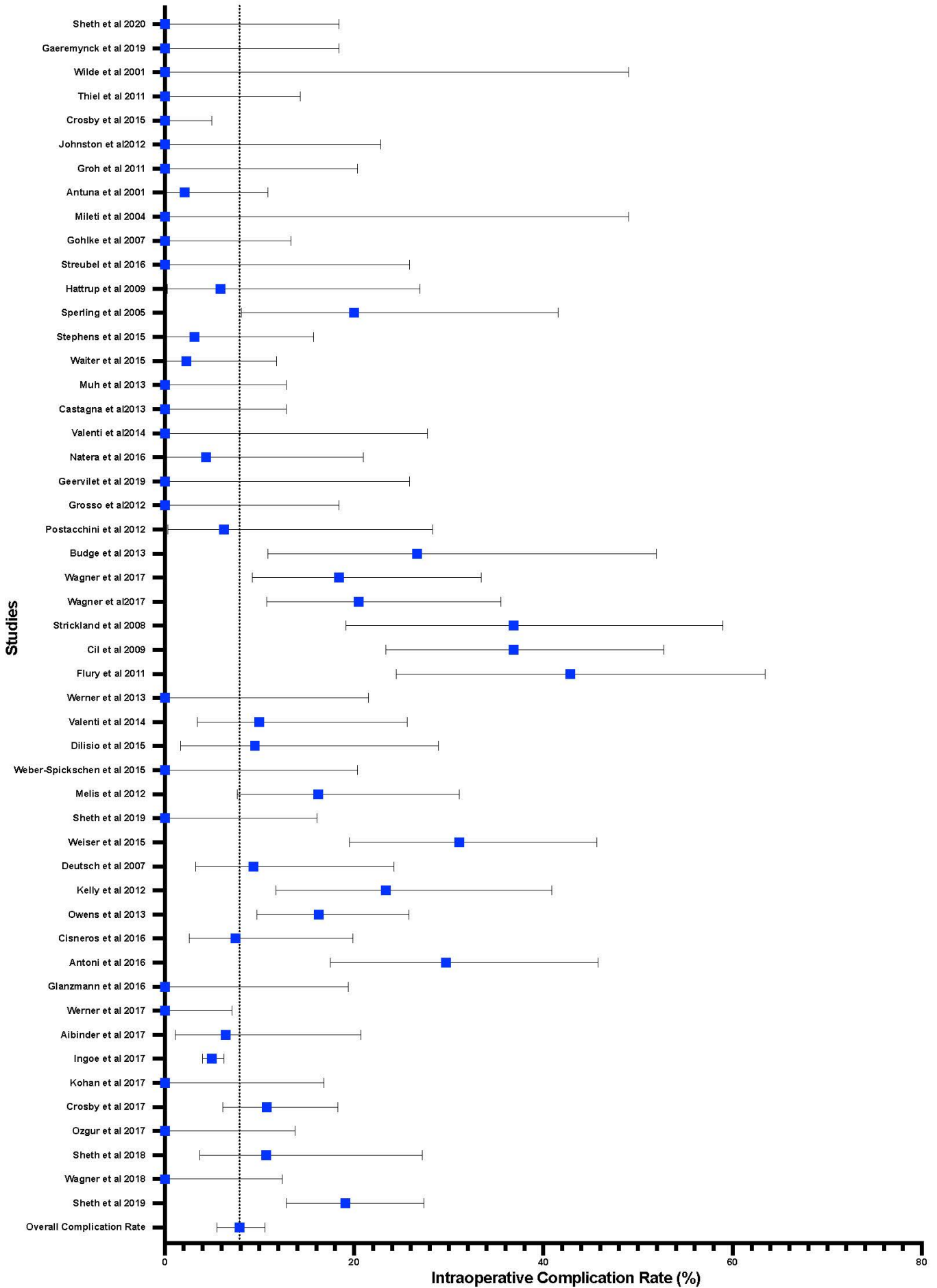
<b>Franke et al 2021<sup>119</sup></b>	III	2	2	2	2	2	0	2	2	2	2	1	2	21
<b>Gaeremynck et al 2019<sup>126</sup></b>	IV	2	2	2	2	2	2	1	2					15
<b>Gorman II et al 2020<sup>125</sup></b>	III	2	2	2	2	2	0	2	2	2	2	1	2	21
<b>Franke et al 2020<sup>118</sup></b>	III	2	2	2	2	2	0	2	2	2	2	1	2	21
<b>Sheth et al 2020<sup>140</sup></b>	IV	2	2	2	2	2	2	1	2					15

**Supplementary Material III. Forest plots from meta-analysis of proportion.**

To interpret the following forest plots: each study is listed along the y-axis with x-axis representing the reported complication/reoperation rate. The complication rate of each study is represented by solid squares, with the size of square representing the study's weighted proportion to the overall complication rate (greater the sample size of the study, the larger the square). The 95% confidence interval (CI) for each study's complication rate is represented by the horizontal solid lines. The weighted complication rate of all studies is represented by the vertical dotted line, with the diamond representing associated 95% CI.



### Intraoperative Complication Rate During Revision Shoulder Arthroplasty



**Fig. a. Intraoperative complication rate during revision shoulder arthroplasty.**

## Postoperative Complication Rate Following Revision Shoulder Arthroplasty

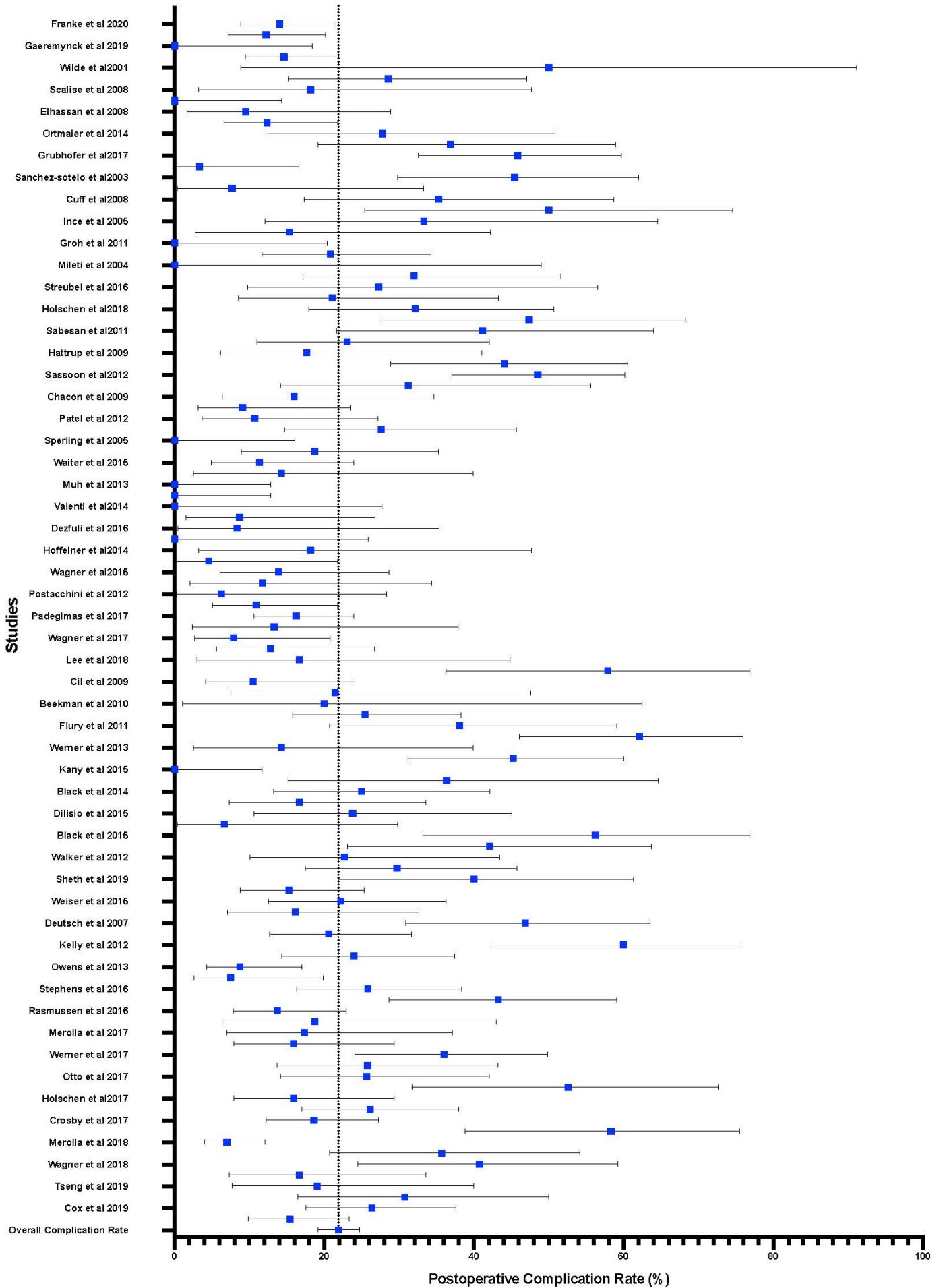


Fig. b. Postoperative complication rate following revision shoulder arthroplasty.

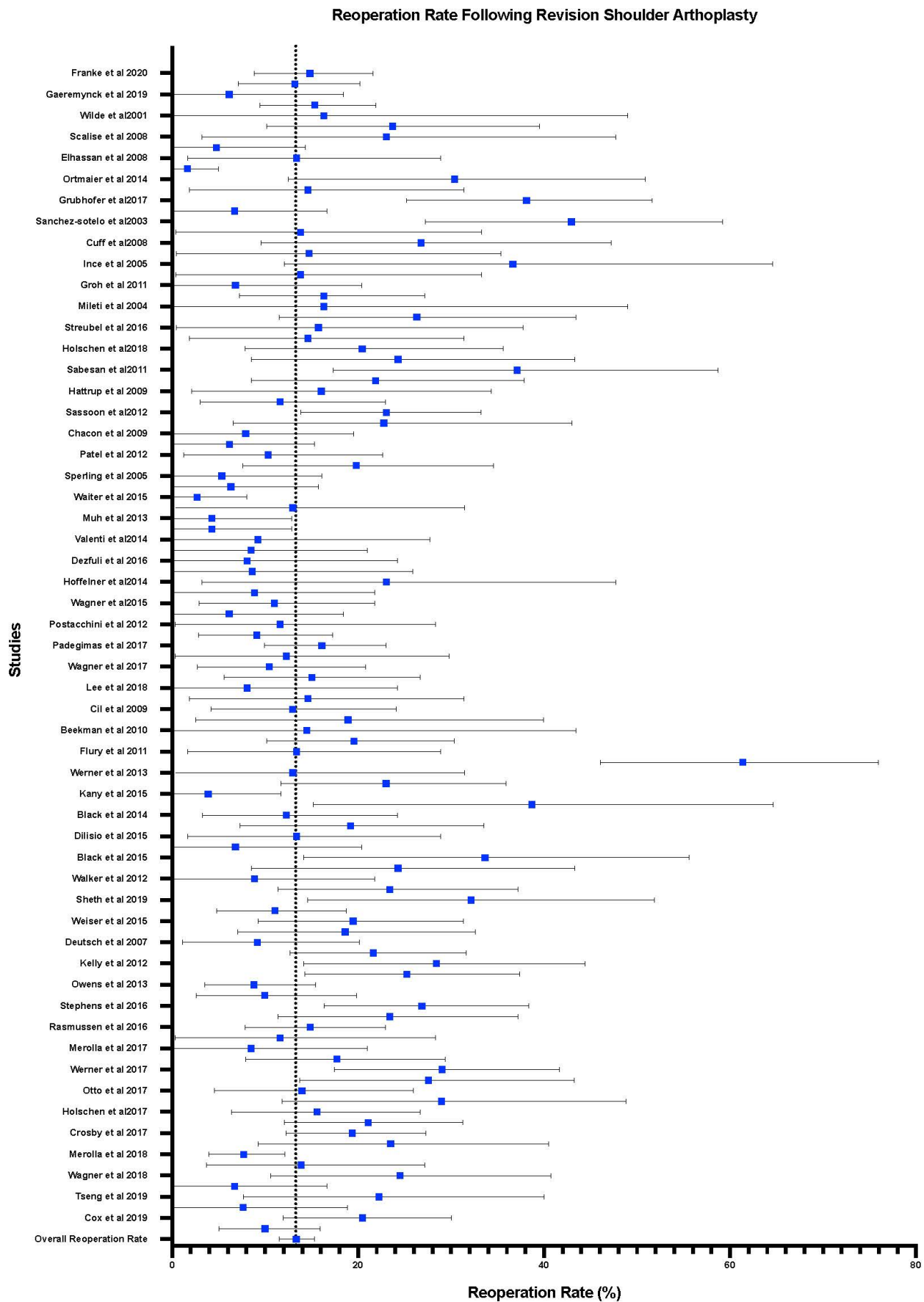


Fig. c. Reoperation rate following revision shoulder arthroplasty.

