The Pendulum Has Swung: A 14-Year Analysis of Trends in Prevalence of Over- and Under-Resection of Femoro-Acetabular Impingement in Failed Hip Arthroscopy

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Background

There is a paucity of literature regarding prevalence of femoral resection in the setting of revision hip arthroscopy. Few studies have examined different types of resections and its presentation.

Objectives

To describe the prevalence of femoral resection types in the setting of revision hip arthroscopy for residual femoroacetabular impingement syndrome (FAIS) symptomatology.

Methods

A search of the institutional prospective registry was performed for patients who presented for evaluation of failed previous arthroscopy between February 2008 and June 2022, and subsequently underwent revision arthroscopy.

AP and Dunn view radiographs were reviewed from our study population. On the basis of measurements on both radiographs, patients were divided into 3 categories: overresection (OR) in which the resection measured 5% or more of the femoral head diameter, underresection (UR) in which residual CAM morphology was found (alpha angle >60°), and neutral resection, alpha angle less than 60° and no overresection.

Both AP and Dunn radiographs were used to identify over- and under- resections.

Results

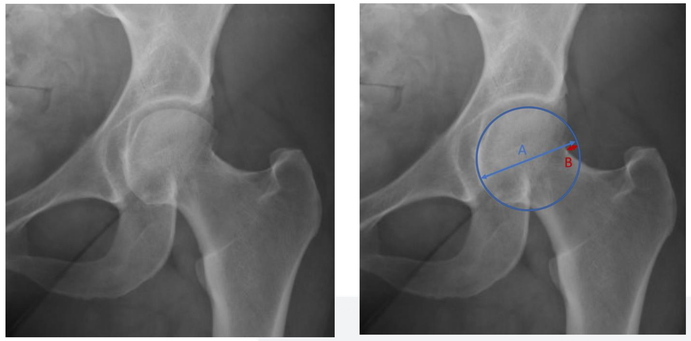


Figure1A. Anteroposterior (AP) pelvis view **Figure 1B.** Resection percentage obtained by measuring the resections depth area (A) and diving it by the diameter of the femoral head (B) (A/B)*100

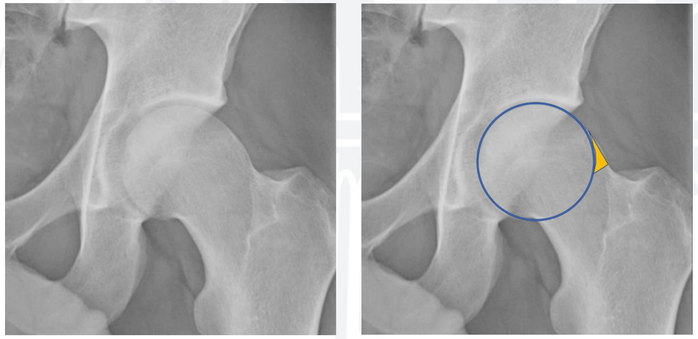


Figure2A. Anteroposterior (AP) pelvis view **Figure 2B.** Area of under-resection marked area in yellow.

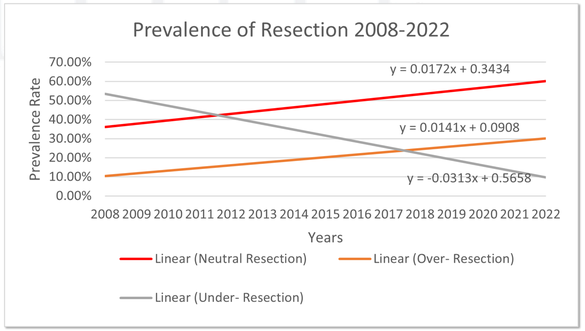
A total of 622 hips were reviewed and measured on both AP and Dunn Radiographs. Of the 622 hips, there were 373 right and 249 left hips. The average age was 33.7 ± 12.0, and the average body mass index (BMI) was 26.0 ± 5.2. Three hundred and sixty-five hips were classified as UR and 265 hips as OR. The mean prevalence rates from 2008 to 2022 for neutral resection, over-resection and under-resection were 48.1%, 20.3%, and 31.6%, respectively. The prevalence rates of UR have decreased since 2008, while prevalence rates of OR have increased concomitantly. The steadily decreasing prevalence rates of UR was negatively correlated with the increasing OR ((R=-0.829, P<.0001), as well as with neutral resections (R=-0.735, P=0.002). The ratio of UR to OR reversed entirely, from 4:1 in 2010, to 1:2.3 (R² = 0.0003) in 2020.

Year	Neutral Resection	Over-Resection	Under-Resection
2008	28.6%	14.3%	57.1%
2009	32.1%	7.1%	60.7%
2010	50.0%	9.8%	40.2%
2011	45.8%	8.3%	45.8%
2012	59.8%	13.4%	26.8%
2013	42.7%	22.7%	34.5%
2014	32.7%	24.5%	42.7%
2015	55.0%	17.0%	28.0%
2016	34.3%	28.6%	37.1%
2017	45.8%	30.2%	24.0%
2018	60.0%	23.3%	16.7%
2019	58.5%	26.8%	14.6%
2020	55.6%	31.0%	13.5%
2021	57.8%	26.7%	15.5%
2022	63.2%	21.1%	15.8%

TABLE 1. Annual Rates of Resection

Year	Neutral Resection	Over- Resection	Under- Resection
2008	14.3%	14.3%	71.4%
2009	17.9%	14.3%	67.9%
2010	36.6%	14.6%	48.8%
2011	33.3%	16.7%	50.0%
2012	44.6%	19.6%	35.7%
2013	29.1%	30.9%	40.0%
2014	16.4%	32.7%	50.9%
2015	40.0%	26.0%	34.0%
2016	25.7%	48.6%	25.7%
2017	31.3%	52.1%	16.7%
2018	53.3%	36.7%	10.0%
2019	43.9%	46.3%	9.8%
2020	31.7%	54.0%	14.3%
2021	41.4%	39.7%	19.0%
2022	47.4%	36.8%	15.8%

TABLE 2. Annual Rates of Resection in Dunn View



Graph 1. Trends of prevalence rate of resection regardless of AP or Dunn View

Conclusions

Amongst patients presenting for failed hip arthroscopy over the last 14 years, the pendulum has swung from under-resection towards over-resection. Indeed, as of 2020, over-resections were more than twice as common as under-resections.

This may be a result of heightened awareness in FAIS, and previous literature emphasizing the risks of under-resection. As we gain increased understanding of the risks of over-resection, the findings of this study highlight the importance of achieving an anatomical spherical resection.

References

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