Conventional vs robotic-arm assisted total hip arthroplasty (THA) surgical time, transfusion rates, length of stay, complications and learning curve

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Background

Total hip arthroplasty (THA) is increasingly more popular with our aging population. Robotic arm assisted THA uses patient specific information gathered from a pre-operative CT scan and correlation with intraoperative checkpoints to improve the accuracy and reproducibility of component positioning. Despite the various advantages robotic arm assisted THA can offer, there are still concerns regarding increased surgical time, technical complexity, complications and costs.

Method

Retrospective review of a single surgeons' last 45 conventional THA performed prior to changing to the robotic arm assisted system with the first 45 robotic arm assisted THA. Surgical time, Length of stay (LOS) in hospital, LOS in rehabilitation, transfusion rates and any complications were compared.

	Conventional	Robotic
Age (years)	62.8 (12.3)	64.5 (9.9)
Side	Left=21, Right=24	Left=20, Right=25
Gender	M=32, F=13	M=25, F=20
Surgical time (minutes)	84.9 (30.7)	96.7 (20.1)
Transfusion?	Yes=1, No=44	Yes=1, No=44
Length of stay: Overall	5.93 (6.95)	4.22 (5.70)
Length of stay: Non-rehabilitation	3.88 (1.40)	2.98 (1.56)

Table 1

Descriptive statistics for continuous variables include mean with standard deviation in brackets while counts are included for categorical variables.

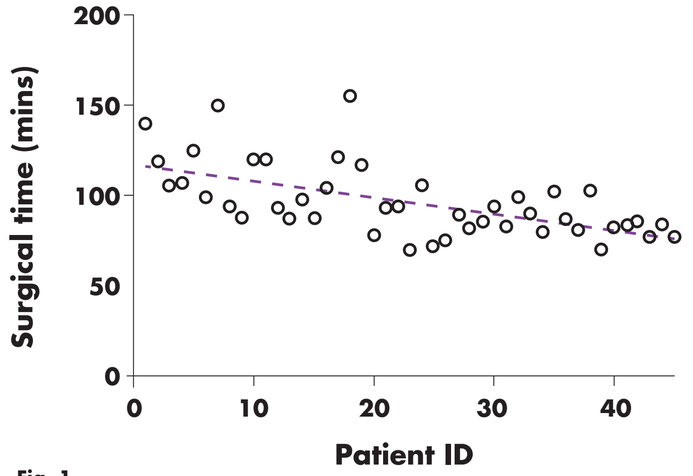

Fig. 1

Surgical time in minutes as a function of the order operations were performed in is presented in hollow circles. A linear function fit is represented by the red dashed line (Y=-0.92*X+117.8).

Results

Average surgical time was 96.7 mins for the robotic group and 84.9 mins for conventional group; however, each robotic operation was approximately one minute shorter than the previous operation and the average time for the last 10 cases reduced to 82.9 mins.

Conclusion

This reduction in LOS, comparable surgical times and potential for less complications may outweigh the increased initial costs associated with the robotic system

Reference:

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