Cost Comparison of In-Office Needle Arthroscopy and MRI in Orthopedic Diagnostics and Treatment: A Systematic Review

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INTRODUCTION:
Historically, magnetic resonance imaging (MRI) has been essential to orthopedic diagnostics and treatment planning. However, in-office needle arthroscopy (IONA), a minimally invasive alternative, has recently emerged as a more accurate diagnostic tool that also enables real-time treatment and direct patient input throughout the procedure. Despite its growing use, a comprehensive understanding of its cost implications compared to MRI remains limited. This systematic review evaluates the literature on cost differences between IONA and MRI across all orthopaedic joint applications.
METHODS:
A systematic review was conducted in June of 2023, identifying studies from the past 10 years that compared the costs of orthopaedic needle arthroscopy and MRI in all joints. Inclusion criteria consisted of being written in English and compared the cost of MRI to IONA. Cadaver studies, animal studies, and case reports were excluded.
RESULTS:
Seven studies met the inclusion criteria and were analyzed. IONA for solely diagnostic purposes, led to per-patient direct cost savings ranging from $418 to $1,097, compared to MRI. When used in combination for diagnosis and treatment, IONA resulted in per-patient cost reductions ranging from $314 to $1,892 per-patient, depending on payer and pathology type. Private payer insurance had a more significant cost reduction than Medicare, regardless of pathology. IONA yielded annual savings of $14,500 per year and up to 177 million at the institutional and health-system levels, respectively.
DISCUSSION AND CONCLUSION:
IONA offers a cost-effective alternative to MRI in orthopedics. However, current literature is limited, with studies focusing solely on knee and shoulder pathologies. Further investigation is essential to assess IONA's diagnostic and therapeutic cost-effectiveness in additional joints and to develop standardized guidelines for its integration into routine orthopedic practice.