

Disclosures



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Introduction



Artificial intelligence (AI) and machine learning (ML) have gained popularity in the field of hip arthroscopy.

Despite the excitement surrounding AI in hip arthroscopy, there remains a significant gap in the research.

The purpose of this study was to assess the ability of ChatGPT to answer common patient questions regarding hip arthroscopy and to analyze the accuracy and appropriateness of its responses.

We hypothesized that this tool would provide accurate answers to most of the questions it encountered.



Common patient questions related to hip arthroscopy were obtained from various well-known frequently asked questions sections of patient education websites of various institutions.

The websites were encountered through a Google search using the search term "common patient hip arthroscopy questions."

Following that, a total of 19 questions were screened, 10 of which were agreed on by all 3 authors to be included in the study. Each question was prompted into ChatGPT 3.5, the free version of the chatbot, on February 9, 2024. No additional prompts were given, and no limit was set on the response length.

A new session was created for every question to remove any context from a previous question.

Some questions required minor modifications to clarify the context (e.g., changing "when can I drive?" to "when can I drive after hip arthroscopy?").



Response grading system		
Α	Correct and sufficient response	
В	Correct but insufficient response	
С	Response containing correct and incorrect information	
D	Incorrect response	

Response grading system



EXAMPLE:

Question 1: What is hip arthroscopy?

ChatGPT response: Hip arthroscopy is a minimally invasive surgical procedure used to diagnose and treat various hip joint problems. During a hip arthroscopy, a surgeon makes small incisions around the hip joint and inserts a tiny camera, called an arthroscope, into the joint. This camera allows the surgeon to see inside the hip joint and identify any issues, such as tears in the cartilage or labrum, bone spurs, or inflammation.

Once the problem is identified, the surgeon can use small surgical instruments inserted through additional incisions to repair or treat the issue. Common procedures performed during hip arthroscopy include removing damaged tissue, repairing torn cartilage or labrum, removing bone spurs, and addressing conditions like femoroacetabular impingement (FAI) or hip dysplasia.

Hip arthroscopy is typically performed as an outpatient procedure, meaning the patient can usually go home the same day. It offers several advantages over traditional open hip surgery, including smaller incisions, less postoperative pain, faster recovery times, and reduced risk of complications. However, not all hip conditions can be treated with arthroscopy, and the suitability of this procedure depends on the specific diagnosis and individual patient factors.



Question 1: What is hip arthroscopy?

Question 2: Who is a candidate for hip arthroscopy?

Question 3: What happens during arthroscopic hip surgery?

Question 4: What does hip arthroscopy treat?

Question 5: What are the advantages of hip arthroscopy?

Question 6: What are the risks or complications of hip arthroscopy?

Question 7: What kind of pain can I expect after hip arthroscopy?

Question 8: When can I drive after hip arthroscopy?

Question 9: When can I go back to work or school after a hip arthroscopy?

Question 10: What are the long-term outcomes of hip arthroscopy?

Results



Question	Response Grade
1. What is hip arthroscopy?	В
2. Who is a candidate for hip arthroscopy?	В
3. What happens during arthroscopic hip surgery?	А
4.What does hip arthroscopy treat?	С
5. What are the advantages of hip arthroscopy?	В
6. What are the risks or complications of hip arthroscopy?	Α
7. What kind of pain can I expect after hip arthroscopy?	Α
8. When can I drive after hip arthroscopy?	D
9. When can I go back to work or school after a hip arthroscopy?	Α
10. What are the long-term outcomes of hip arthroscopy?	Α

Questions and response concensus grades.

Advantages of ChatGPT



Easily accessible

Can reduce the burden of patients searching multiple websites for their health information.

Uses language that is easily understood and can modify its language complexity if prompted.

Relatively inexpensive

Advantages of ChatGPT





ChatGPT response: During arthroscopic hip surgery, a surgeon makes small incisions around the hip joint and inserts a tiny camera called an arthroscope. This allows them to visualize the inside of the hip joint on a monitor. Surgical instruments are then inserted through other small incisions to repair or treat various hip conditions. The specific procedures performed during arthroscopic hip surgery can vary depending on the individual's

- condition, but common interventions include:

 1. Labral repair: If there's damage to the labrum (a ring of cartilage around the hip socket), the surgeon can trim or
- 2. Removal of loose bodies: Loose fragments of bone or cartilage inside the joint can be removed.
- 3. Treatment of femoroacetabular impingement (FAI): FAI occurs when there's abnormal contact between the ball and socket of the hip joint, leading to pain and limited range of motion. Surgeons can use arthroscopic techniques to reshape the bones involved and relieve impingement.
- 4. Synovectomy: Removal of inflamed synovial tissue inside the joint.
- 5. Treatment of hip joint infections: Arthroscopic surgery may be used to drain an infected hip joint or remove infected tissue.
- 6. Repair of cartilage damage: If there's cartilage damage within the hip joint, surgeons may perform techniques such as microfracture or cartilage transplantation to promote healing.

Arthroscopic hip surgery is typically less invasive than traditional open surgery, which can lead to quicker recovery times, less pain, and lower risk of complications. However, it's important to discuss the risks and benefits of the procedure with your surgeon, as well as any specific instructions for pre- and post-operative care.

Follow up prompt:
Please repeat the response using simpler language.

ChatGPT response: Sure, during arthroscopic hip surgery, doctors use a tiny camera and small tools to fix problems inside the hip joint. They make small cuts around the hip, then insert the camera to see inside. Other tools go through these cuts to do things like fixing torn cartilage, removing bone or cartilage bits that shouldn't be there, or fixing issues like hip impingement. It's a less invasive way to treat hip problems and usually leads to a faster recovery compared to open surgery.

Follow up prompt:
Please repeat the
response using more
complex language.

ChatGPT response: Certainly! Arthroscopic hip surgery entails a minimally invasive approach wherein a surgeon employs small incisions to access the hip joint. Through these incisions, an arthroscope-a miniature camera is introduced, affording the surgeon a clear view of the inner workings of the joint via a monitor. Concurrently, specialized surgical instruments are inserted through additional incisions to address various hip aliments.

The surgical procedures undertaken during arthroscopic hip surgery are tailored to the specific condition of the patient, but they typically encompass the following:

- 1. Labral repair: Restoration or trimming of a damaged labrum-a ring of cartilage encircling the hip socket is conducted to mitigate associated issues.
- 2. Removal of loose bodies: Extrication of loose bone or cartilage fragments within the joint space is executed to alleviate discomfort and prevent further complications.
- 3. Femoroacetabular impingement (FAI) correction: Rectification of FAI, characterized by abnormal contact between the hip ball and socket, is achieved through bone reshaping to alleviate impingement-related symptoms.
 4. Synovectomy: Elimination of inflamed synovial tissue, which lines the joint and can exacerbate discomfort and impede joint function, is performed.
- 5. Treatment of hip joint infections: Drainage of infected fluid or excision of infected tissue from the hip joint is undertaken to mitigate the spread of infection and foster healing.
- 6. Cartilage repair: Techniques such as microfracture or cartilage transplantation are utilized to address cartilage damage within the hip joint, facilitating the restoration of optimal joint function.

Arthroscopic hip surgery is preferred for its minimally invasive nature, translating to expedited recovery, diminished post-operative discomfort, and reduced risk of complications compared to traditional open surgical approaches. Nevertheless, it is imperative for patients to engage in comprehensive discussions with their surgeons regarding the potential risks, benefits, and requisite pre- and post-operative care protocols.

ChatGPT is able to tailor its original response complexity depending on the provided prompt to provide a simpler and shorter response or a more complex and in-depth response. This provides flexibility for patients seeking information that would otherwise not be available in traditional educational resources.

Disadvantages of ChatGPT



Data can lack accuracy as ChatGPT has no way of verifying its sources.

"Al hallucination", which is the production of incorrect responses with confident and logical explanations to justify them.

Many concerns related to data privacy and bias exist and must be paid special attention.

Conclusions



ChatGPT can answer common patient questions regarding hip arthroscopy with satisfactory accuracy graded by 2 high-volume hip arthroscopists; however, incorrect information was identified in more than one instance.

Caution must be observed when using ChatGPT for patient education related to hip arthroscopy.

The responsible use of ChatGPT depends on knowledge surrounding its limitations and dangers.

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