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PRESENTATIVE SURGICAL REMOVAL OF THE APPENDIX PRIOR TO A SPACE-FARING MISSION

Abstract

This presentation covers the arguments for and against the precautionary removal of the appendix in astronauts before spacefaring missions, providing detailed risks and benefits of the procedure. Residing in space poses challenges for astronauts in many medical aspects. The limitation to diagnostic and surgical methods in a microgravity environment proves to be an on-going concern during space missions. Preventative measures, such as an appendectomy, can be taken to minimize the chances physical ailment that would warrant return to Earth to receive proper medical care. Although such a strategy does not address a common and imminent problem, it acts as a safeguard to reduce the probability of an emergency that could expend a life or become a substantial loss in funds, time, and opportunity. A precautionary procedure such as the removal of the appendix before a mission may also serve to better-diagnose future problems while in space by eliminating a possible cause for any experienced symptoms in the abdominal cavity. It is important to comprehend this advantage when considering the lack of onboard imaging modulates available on a spacecraft. Diagnostic ultrasound is the principal tool for abdominal imaging [1] which limits the ability to identify potential causes, and the effect of microgravity on fluids within the cavity may interfere by altering appearances. A laparoscopic appendectomy proves minimal risk to patients after surgery, with a minor chance of wound infection, abscesses that are treatable, and marginal scaring. Moreover, there are no negative long-term effects on health. Conversely, the benefits of appendectomy heavily outweigh the surgical risks, for appendicitis may render an astronaut in a critical situation. Once the appendix is inflamed due to a blockage or other cause, it may rupture and allow feces and bacteria to spread to the surrounding tissues. Within 36 hours of the onset of appendicitis symptoms, risk of perforation is at least 15% [2], and in a worst case scenario may lead to sepsis, an infection of the blood and other organs due to the exposure of bacteria to neighboring blood vessels. There is clearly an advantage to taking surgical measures on preventing non-prevailing ailments in astronaut personnel, and until technological advances can be made, these methods may aid in safety.

References: [1] Barrat, M. R., Pool, S. L. 2008. Principles of clinical medicine for space flight. Springer Science+Business Media, New York, NY.

[2] Lee, D. Appendicitis and Appendectomy. http://www.medicinenet.com/appendectomy/article.htmtocb. Accessed 02/27/11.