

Telesurgery and Robotic Surgery: Ethical and Legal Aspect

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Abstract

Robotic surgery is a surgical procedure that places a computer or a computer technology between the surgeon and patient during surgery and involves the total control of the surgeon. Telemedicine, telesurgery and robotic surgery are new concepts that are very necessary for the medical practice because of the many advantages and opportunities created. Legal and ethical implications linked to the use of telemedicine, telesurgery and robotic surgery should be clarified for proper use, and for eliminating uncertainty and skepticism. This paper is a review of ethical and legal requirements regarding telesurgery and robotic surgery.

Key words:

Robotic-assisted surgery; Telesurgery, malpractice; Ethical issues; Telementoring

Introduction

Robotic assisted surgery was first developed by the Department of NATO, as a need to provide surgical assistance to soldiers, directly on the battlefield [1]. Phil Green was the first to complete, in California, a system consisting of two cameras and a telerobot, system attached to a surgical table situated in the battlefield theatre [2]. The cameras were transmitting images of surgery to a computer situated at a certain distance, from which a surgeon was controlling the surgical telerobot [1].

Since they were first used, telesurgery and robotic assisted surgery have become increasingly used in the medicine; because of the many advantages they provide [3].

The importance of telemedicine, telesurgery and distance surgery is not restricted only to the ability of performing medical procedures in areas where these are not otherwise possible and can be extended to telementoring, which involves training medical professionals in performing those procedures [4]

Robotic assisted surgery was initially successfully used in urology, and subsequently in gynaecology, general surgery, and cardio-thoracic surgery [2]. As robotic surgery has become increasingly present into clinical practice in the last years, clinicians must be familiar with the legal and ethical aspects involved [1,5].

Telesurgery is defined as any surgical procedure performed by a surgeon or a surgical team, at any distance from the patient and theatre [6]. This new diagnostic and treatment technique is a branch of telemedicine, which involves utilising medical information in a different location from that of the patient, via telecommunications and electronic devices, with the aim of delivering highest quality medical care [5,7].

Telementoring is a new experimental way of training medical professionals in different procedures, with the advantage of world top experts sharing their expertise in training doctors from around the world [1].

The element that defines robotic assisted surgery is the distance between the patient and the surgeon, with no real interaction, which could generate a degree of skepticism from both sides [2].

Traditionally, surgery was performed at a distance measured in centimetres or millimetres from the patient and in most cases involved a physical contact between the surgeon and the patient. With the development of laparoscopic surgery this distance increased, at the same time leading to better surgical outcomes [1].

Telemedicine and telesurgery have the great advantage of high quality diagnostic and treatment methods being available for patients in socially or economically disadvantaged territories [for example because of war or limited specialist access] [5]. On the downside, the costs of robotic-assisted surgery and the difficulty of having such robots in most of the hospitals in the disadvantaged countries, restrict the access of most patients to the new technologies [8].

Use of telesurgery, telementoring and robotic surgery has led to globalisation of surgery and allowed for the geographic and political barriers and limits to be overcome, but various economical, legal and ethical issues have emerged [2].

Telemedicine in general, and robotic-assisted surgery in particular are characterised by certain ethical principles and duties, in order for doctors from different specialties to offer their expertise in situations when they cannot directly interact with their patients [1].

Although telemedicine and robotic surgery have certain advantages allowing the doctors to practice in regions or countries with a deficit of appropriately qualified personnel, they can also accelerate the emigration of specialists from their own countries to wealthier countries, as they think they would be able to practice in their own country or any other part of the world without physically being in that country [3,4].

With telemedicine or robotic-assisted surgery the ethical principles of medical practice remain the same and they include the right to confidentiality, equipment safety, data collection and storage [1].

The legal issues arise when it becomes necessary to apply the law for procedures performed in a different country, with a different jurisdiction; this has implications in the way insurance companies cover certain risks or procedures [2,9].

Regarding insurance companies, this topic remains controversial given the fact that insurance policies vary from one insurance company to another and on the other hand insurance policies only cover certain medical issues. Therefore each medical centre should choose an insurance that they believe is the best for the activity they undertake. It is preferable that each hospital develops with the insurance company an insurance contract specific and personalized for its needs.

Legal and ethical aspects should corroborate to validate medical qualifications and specialists accreditations and to unify the standards of practice, with the aim of preventing the limitation of patient's access to the services of telemedicine and robotic surgery [4].

The parties involved in the process of robotic assisted surgery should sign a consent form designed for this type of treatment, and the patient and the doctor should be the only parts that have to decide to this therapeutic method and not another. [2,5]. Once the consent has been given, legally this represents a convention or contract setting the rights and duties of the parties involved [10].

In case of critical incidents such as intra-operative complication or even patient death, the responsibility of the owner of the robot should be also investigated [9,10,11].

In the situation of liability for civil delicts in the case where element extraneity the law of the place where the delict was committed [lex loci delicti commissi] applies [10]. In the situation where the prejudice has its effect in a different country, the correlative right to demand and receive reparation in that jurisdiction applies [11].

Medical centres that offer tele-surgery services must employ a specialist in the treated pathology that would deal with the intra and post-operative complications. Furthermore, the medical centres and doctors must have insurance that covers robotic assisted-surgery and telesurgery services [4,10].

During robotic assisted surgery there is distance between the primary surgeon and patient, however an assistant surgeon must be always present at the operating table.

Every country has a code that establishes the fundamental principles and duties of a doctor. These codes are based on the ethical principles and on the duty of the doctors to protect life, health and physical and psychical integrity of his patients, regardless of the geographical locations, making the care of their patients their first concern and respecting their dignity [1,12].

When performing telesurgery, the doctor is not in direct contact with his patient, but this must not prevent the application of medical ethical principles or other of the duties the doctor has to his patient, such as confidentiality, equipment quality and safety, quality of the

medical services, valid consent and providing all the information the patient wants or needs to make an informed decision, recording and storage of data relating to the medical act [4].

In order to ensure better communication and the patient's trust in his doctor, telesurgery should be performed whenever possible after a previous relationship has been established between the two parties; it is recognised that this may not be always possible [2,10].

In medicine in general, and in telemedicine and telesurgery in particular, measures to evaluate the quality of medical services must be in place, in order to ensure the highest standard diagnostic and treatment services are offered to patients [1,2,3].

With the use of electronic systems confidentiality might be at risk and special measures must be taken in order to prevent improper communication of medical data [4]. In situations like transmission of scan results, especially in cases of ultrasound scans showing the gender of a child, certain malformations or tumours, supplementary measures must be taken [4,10]. The doctors providing the medical services from the distance must make sure that the patient consented for these information to be transmitted via electronic systems [11,12].

In conclusion, although telesurgery offers certain advantages for both patients and doctors and is increasingly being used, practitioners should be aware of the legal and ethical aspects. Ideally, a standardisation and regimentation of these aspects should be implemented, so the same considerations are to be taken into account in all the countries providing or benefiting from telemedicine services.

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