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Chest wall surgery: Chest wall plastic surgery or chest wall orthopedics

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Abstract

Chest wall surgery is a new specialty, which comes from the traditional thoracic surgery specialty, but it has new characteristics. Because chest wall surgery must consider the appearance of chest wall, it can be regarded as chest wall plastic surgery. In addition, because every kind of chest wall disease involves the changes of the bony structures of the chest wall, it can also be regarded as chest wall orthopedics. The concepts of chest wall plastic surgery and chest wall orthopedics have injected new thinking into chest wall surgery and played a positive role in its final healthy development. This new thinking will eventually develop chest wall surgery into a completely independent clinical specialty, rather than a sub-specialty of thoracic surgery.

Keywords: Chest wall surgery, chest wall plastic surgery, chest wall orthopedics

Introduction

Traditional thoracic surgery has entered the so-called era of minimally invasive surgery ^[1, 2]. However, it has also entered an era of problems, because not all the work of traditional thoracic surgery has been developed synchronously. The clinical work that is now widely valued is actually only a part of thoracic surgery, but more content has been ignored, which has caused a condition of abnormal development ^[3].

Thoracic surgery is originally a comprehensive surgical specialty, which includes not only the treatment of intrathoracic diseases, but also that of extrathoracic diseases. In the early years of thoracic surgery, the treatment of all these diseases was widely carried out. It was an age of balanced development ^[4, 5]. Since the 1990s, the concept of minimally invasive surgery has entered the clinic, and thoracic surgery has also been affected by this concept, gradually entering the era of minimally invasive surgery ^[6]. Minimally invasive thoracic surgery is accomplished through a special device, that is, thoracoscopy. This device is specially used for intrathoracic surgery, which is beneficial to the surgeries of lung, esophagus, mediastinum and other intrathoracic structures. With the continuous development of technology related to thoracoscopy, thoracoscopic surgery has become more and more mature, which makes this technology quickly promoted and popularized ^[6, 7]. Compared with traditional open surgery, minimally invasive surgery has obvious advantages, so it is popular with patients, which obviously represents the development direction of traditional surgery. Thoracoscopic surgery conforms to this direction, so it has a great momentum for development. Doctors are promoting the development of technology, and various device manufacturers are also actively promoting it. When all the forces and resources vigorously promote the development of thoracoscopy technology, a trend will form in the whole specialty. In this tide, the most active participants are undoubtedly those famous medical centers, famous thoracic surgery department and famous thoracic surgeons. The behavior of these participants played an exemplary role, and the result was that all thoracic surgeons had to work with this trend. Nowadays, when most thoracic surgeons describe their work, they will mention thoracoscopic surgery, which seems to be the whole of thoracic surgery. Such a description is obvious incorrect. The correct description should be that this is a completely abnormal phenomenon. Thoracoscopy is a device used to complete surgery for intrathoracic diseases. When thoracoscopic surgery is respected by most thoracic surgeons, those operations that do not need thoracoscopy, that is, operations outside the chest, will be ignored, which has become the most real scene of thoracic surgery today ^[3].

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Diseases outside the thoracic cavity are chest wall diseases, the operations of which are the important parts of traditional thoracic surgery. In general, these diseases can be divided into five specific types: infection, trauma, tumor, defect and deformity [3, 8]. These types are basically the same as those of intrathoracic diseases, and also similar to those of other surgical specialties. In the early work of thoracic surgery, great progress had been made in the treatment of these diseases, and their treatments had been vigorously carried out. However, With the vigorous development of thoracoscopic surgery, the treatment of these diseases has been forgotten by most doctors. This has seriously affected the treatment of these diseases.

Actually, the incidence rate of these diseases is not low. Data show that the incidence rate of single thoracic deformity is as high as 1%. If other kinds of chest wall diseases are added, the incidence rate will be more considerable. These patients all have related symptoms and discomfort, and they need care and treatment. If thoracic surgeons only focus on the treatment of intrathoracic diseases without thinking about these diseases, it will bring many practical problems. To solve these problems, it would be necessary to face the reality and vigorously develop chest wall surgery.

The development of minimally invasive technology in traditional thoracic surgery has neglected the treatment of chest wall diseases, which is not only disadvantageous, but also beneficial, that is, it provides opportunities for the development of chest wall surgery.

Although chest wall disease and intrathoracic disease are both traditional thoracic surgery diseases, the nature of surgery is also different due to their different positions. In general, surgery for intrathoracic diseases is generally to eliminate the disease, so its essential attribute is to treat the disease. However, in addition to physiological damage, chest wall diseases also affect the appearance of chest wall. Therefore, surgery for chest wall diseases generally has two properties, one is the nature of treatment, the other is the nature of plastic surgery [3]. The nature of plastic surgery is the biggest difference between chest wall surgery and intrathoracic surgery.

Plastic surgery is to trim the shape of human body structure by surgical means to meet the needs of patients. Chest wall diseases directly affect the appearance of the chest wall. Therefore, one of the important purposes of surgery is to restore the normal shape of the chest as much as possible. This is the purpose of many chest wall surgeries. If we do not consider the purpose of treating some special diseases, such as tumors, infections, trauma and other diseases, plastic surgery will be the only goal of surgery. When treating tumors, infections and trauma, plastic surgery must also be considered, which is the basic requirement of many patients for surgery. It can be seen that no matter what kind of chest wall disease surgery, there is an essential component of plastic surgery. Therefore, if chest wall surgery is called chest wall plastic surgery, no one should raise an objection.

Conversely, there are many kinds of diseases in plastic surgery, and almost all of these diseases can be divided into five diseases similar to chest wall surgery diseases. This undoubtedly brings the relationship between chest wall surgery and chest wall plastic surgery closer.

In addition to the nature of plastic surgery, surgery for chest wall diseases has another important attribute, which is the attribute of orthopedic surgery. In essence, the five diseases of chest wall are similar to those of orthopedics. Because every disease involves the abnormality of bone structures, its

essence is not different from traditional orthopedic diseases. For example, the deformity of the chest wall is essentially the deformity of the bony structures of the chest wall, which is exactly the same as all kinds of bone deformities. Another example is chest wall tumors, which are almost all involved in the chest wall bones, so they are not fundamentally different from bone tumors. Chest wall trauma almost all involves fractures of ribs, costal cartilage and sternum, which is basically similar to trauma in orthopedics. Chest wall defect is the defect of rib, costal cartilage and sternum, while chest wall infection is often associated with the infection of chest wall bone structures. It can be seen that the five diseases of chest wall surgery are almost the same as those of orthopaedics. Therefore, chest wall surgery can be directly called chest wall orthopaedics.

Human bones play an important role in maintaining a specific function on the one hand, and in maintaining the appearance or posture of local parts of the human body on the other hand. Therefore, orthopedic surgery also has two basic attributes, namely, treatment and plastic surgery. It can be seen that the two attributes of bone surgery and chest wall surgery are also exactly the same. This makes the relationship between the two more closely.

We first proposed the concept of chest wall surgery in 2016, and then established the world's first independent chest wall surgery department on May 9, 2018 [8]. From the beginning of the establishment of the Department, we have regarded five basic diseases as the main content of our admission. On this basis, we have carried out a lot of clinical work. Our works inherited the technical content of traditional thoracic surgery basically, but we also strive to learn from the technical content of plastic surgery and orthopedics. Our experience shows that when we use the concepts of these two mature clinical specialties to treat chest wall diseases, we will get more ideal results. This proves from the opposite side that there is a natural connection between chest wall surgical diseases and plastic surgery and orthopedic diseases. Therefore, it is reasonable to call chest wall surgery chest wall plastic surgery or chest wall orthopedics.

Chest wall surgery is a new comer in clinic, while plastic surgery and orthopedics are mature clinical specialties. If we can recognize the relationship between chest wall surgery and these mature specialties, we can learn the theories and techniques from them, which will be of great significance to the development of this a new specialty. In addition, early chest wall surgery must be inextricably linked with thoracic surgery, and may even be regarded as a branch or sub specialty of thoracic surgery. However, once the concepts of plastic surgery and orthopaedics are incorporated into it, chest wall surgery will soon become a completely independent specialty. This will be important for the leap forward development of the specialty.

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