

**HUNTERIAN LECTURES ON TENSION,  
AS MET WITH IN SURGICAL  
PRACTICE. INFLAMMATION OF  
BONE. AND ON CRANIAL AND  
INTRACRANIAL INJURIES**

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Hunterian Lectures on Tension, as Met with in Surgical Practice. Inflammation of Bone. And on Cranial and Intracranial Injuries by Thomas Bryant

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**THOMAS BRYANT**

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# HUNTERIAN LECTURES

ON

TENSION, AS MET WITH IN SURGICAL  
PRACTICE.

INFLAMMATION OF BONE.

AND ON

CRANIAL AND INTRACRANIAL INJURIES.

DELIVERED BEFORE THE ROYAL COLLEGE OF  
SURGEONS OF ENGLAND, JUNE, 1888.

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BY

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# HUNTERIAN LECTURES.

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## LECTURE I.

ON THE CAUSES, EFFECTS, AND TREATMENT OF TENSION  
AS MET WITH IN SURGICAL PRACTICE.

MR. PRESIDENT AND GENTLEMEN,—

When, through the kindness of my colleagues in the Council of this College, I was invited to accept the responsible position of Professor of Surgery and Pathology in this honoured Institution, I acceded to their request as a matter of duty, although with much diffidence, as I felt mistrustful of my power to bring before an audience, such as is wont to meet in this theatre, either material of sufficient importance to excite their interest, or to place it before them in a way sufficiently attractive to satisfy their critical requirements. To excite your interest, I have therefore selected a subject with which practical surgeons have long been familiar, and the importance of which they have recognised, but concerning which there is little or no literature—I allude to that of



Tension; and should I fail to make it sufficiently attractive, I have confidence that it will prove suggestive and tend towards some practical good. During the last few years the word "tension" has been freely used by both physicians and surgeons, although it has not been always employed with the same meaning. In my own student days it was rarely, if ever, heard; indeed, in a surgical point of view it had then but little significance. At the present time, however, we read and hear of it in many senses. The physician talks to us of arterial and muscular tension, and all admit that the word, as thus applied, carries with it deep meaning. The surgeon uses the term as applied to the pressure brought about by the distension or stretching of tissues by cystic or solid growths, by the extravasation of blood, and more particularly by what is far more common—the effusion of inflammatory fluids. I propose, therefore, in the following lecture, to invite your attention to these different causes of tension, and to trace their effects. I shall do this from the clinical point of view, under the conviction that some practical good may be derived from a full consideration of the subject, and with the hope that some light may thus be thrown upon the diagnosis and treatment of surgical disease.

With respect to the meaning of the word "tension" as employed in surgical work, and particularly in clinical work, it most frequently means the pressure brought about by the stretching or distension of

tissue from either the growth of some neoplasm or the effusion of some fluid; tension, in this sense, meaning distension or the stretching of parts by a force acting from within—by centrifugal pressure, as it may be rightly termed. It is, however, applied in another way; that is, to the stretching of tissues which have been divided and brought together by sutures, the strain upon the sutures from the elasticity of tissues being the measure of the tension.

The effects of tension will be found to vary according to the nature of the tissue subjected to its influence. In one of an elastic kind, which yields readily under distension, the effects of tension are neither much felt nor well displayed, unless the expanding or distending force be carried to its full extent; whereas in a tissue which is unyielding and inelastic the mildest distending force is resented, and the effects of tension are forcibly demonstrated. Again, when the distending or stretching medium acts *rapidly*, the tension brought about in the tissues is severe, the symptoms associated with it are serious, and its effects destructive. On the other hand, when the distending, stretching, or straining medium acts *slowly*, tension is seen acting at a lower level, its symptoms are modified in intensity, and its effects qualified. As a general rule, the severity of the effects of tension, as well as the severity of the symptoms which characterise its different degrees, is found to turn upon the acuteness of its action

and the elasticity of the tissues implicated. To this rule, however, there are exceptions.

The *ultimate* effects of tension upon any tissue turn, as already stated, upon the elasticity of the tissue and the rapidity with which the tension has been brought about; but they are invariably destructive. Its *immediate* effects, or mode of action, are primarily upon the circulation, particularly the venous; and the pressure from within of necessity tends to bring about—first a slowing of the capillary blood current through the stretched parts, and later on its stagnation, from which the death of tissue follows. When tension is very great, the venous and probably the arterial circulation through the tissues may be absolutely arrested. The nerves of the implicated tissues are at the same time stretched or pressed upon, and as a result pain is produced, and the severity of the pain is determined by the degree of pressure or stretching to which the nerves are subjected, and the character and quality of the nerve supply to the part. The pressure of tension, being centrifugal, acts all round. When the tension has been brought about by the effusion of inflammatory fluids, the effects described are aggravated, for the blood stasis which is well known always to exist in inflamed tissues is encouraged by tension; but of this later on. Where tension occurs in tissues which are not inflamed, inflammation is excited even when the tension is maintained at a low level. Where tension is more severe, destructive inflamma-