This point is not of much importance, as cases requiring suspension form a very small proportion of the total lying cases.

It is commonly used for fractures of the thigh in a Thomas' splint, but it also serves for fractures of the humerus in a Thomas' arm splint. The material is cheap and easily obtained, and the work can be done by any smith.

NOTES ON THREE CASES OF LIGATURE OF THE COMMON CAROTID ARTERY AT A CASUALTY CLEARING STATION.

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In those cases of injury to the large vessels of the neck which escape death upon the field from primary hemorrhage, operative treatment is seldom called for before the patient reaches a base hospital. The conditions usually presented at a Casualty Clearing Station are either a small deep traumatic aneurysm or, more commonly, an arteriovenous aneurysm of variable size, while, in a few rare cases of severe reactionary or secondary hemorrhage, ligation may be indicated.

An aneurysm which is increasing in size or is dangerously superficial in the neighbourhood of the wound may necessitate early operation, but all other cases are best treated by rest and observation. At the end of fourteen days, if the tumour be stationary or decreasing in size, they may be transferred to the base, where spontaneous cure will sometimes occur after several weeks, or operation can be performed when the limit of diminution is reached.

An aneurysm existing for even a few hours is the best preparation for ligature, owing to the fact that the collateral circulation is gradually and not suddenly called upon to supply the area of deprivation, and can adequately cope with the requirements of the tissues when complete cessation of supply through the original channels is effected. This is well exemplified in the case of the popliteal artery where severance of the vessel by a bullet, even without much loss of blood, almost invariably leads to gangrene of the leg, while ligation for traumatic aneurysm very seldom does so; the Letouffier tube aims at the performance of this function of an aneurysm in the provision of a modified supply of blood, while the critical period of collateral expansion is tided over.

During thirty months in a Casualty Clearing Station, amongst a total of 44,000 wounded, I have seen only three cases in which ligature of the common carotid appeared to be indicated, each for one of the three conditions enumerated above—severe secondary hemorrhage, dangerously superficial aneurysm, and a tumour which increased in size despite rest in bed.
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Pte. M. was wounded on December 28, 1914, by a rifle bullet, which entered the neck posteriorly at the level of the fourth cervical vertebra and one inch from the middle line on the left side. The ascending ramus of the lower jaw and the alveolus of the upper on the left side were shattered. The malar bone was fractured but not comminuted, and the whole cheek from mouth to ear was torn in shreds. He was in a state of collapse, and much ensanguinated when admitted to a Casualty Clearing Station eight hours after being wounded. An intravenous saline, containing two drachms of brandy, was administered, and this, combined with warmth, gave rise to a severe reactionary hemorrhage. The large gauze plugs in the wound were quickly withdrawn and, aided by the patient fainting, several large fragments of bone and loose groups of teeth were removed. No bleeding points were secured, but a ligature was applied to the twisted end of the facial artery, which lay free in the wound. Packing sufficed to arrest the welling up of blood from the deeper parts at the time, but on the following morning another severe hemorrhage occurred, and, under an anaesthetic, I tied the external carotid through an incision extending from the wound.

For four days there was no further hemorrhage, but the wound became extremely septic, and the foster, associated with large wounds of the mouth, was unpleasantly pronounced. On the fifth day, a violent hemorrhage took place while the patient was drinking some lemonade. The blood appeared to flow from the internal carotid, where ulceration of the vessel had probably occurred. He rapidly became semi-conscious, and, under a light anaesthetic, I tied the common carotid through a transverse incision. This wound was covered with gauze and collodium and remained aseptic throughout. This operation rendered him completely aphasic and hemiplegic for three days, and very dangerously ill for a week. On the fourth day he suddenly called out “Here!” and this word was used to express all his wants until the seventh day, when his vocabulary commenced to increase and, in certain moods, to intensify to a considerable degree. The first voluntary movement of the right arm and leg occurred also on the fourth day after operation. He was very irrational for about ten days, and required nasal feeding on several occasions. When transferred to the base, three weeks after the last operation, the movements of the limbs of the right side equalled those of the left in vigour; and he was cheerful and sensible, although still very weak. Five months later he wrote from Ireland to say that he was quite well except for “the extra little hole in his face.”

Pte. F. was wounded on July 26, 1916, by a shell splinter, which entered the left side of the neck at the anterior border of the sternomastoid, immediately above the level of the cricoid.

Prior to admission to the Casualty Clearing Station fine gauze plugging had been packed into the wound and the hemorrhage success-
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fully arrested. A large superficial anteriovenous aneurysm was present, with a loud "machinery" bruit and distinct "prickly" thrill. He complained of continuous roaring noises in the head like breakers on a shore, which forbade sleep, and considerable discomfort was experienced on swallowing, or movement of the head, but no actual pain.

As the aneurysm was large and dangerously near the surface, exposing him to the risk of copious haemorrhage on extraction of the plug, I ligatured the common carotid on the following day. No change was visible in the face on tightening of the ligature. On removal of the gauze plug from the wound, considerable venous haemorrhage took place. The sac was freely exposed, and the veins leading thereto, including the internal jugular, were grouped together above and below and ligatured. As the haemorrhage was thereby completely arrested, the artery which had been undisturbed at the seat of injury was not ligatured distally. The missile was not searched for. He exhibited no post-operative symptoms. The noises in the head had disappeared completely, and there was no trace of paralysis or aphasia. He was transferred to the base on the tenth day after operation, and three months later wrote to say that the missile had been extruded on October 1 through a small sinus at the seat of the original wound without operation, and he was about to have a Board with a view to a return to active service.

The third case was undertaken for an enlarging tumour, which proved to be an abscess in the laminae of the original aneurysmal sac, and, unfortunately, ended fatally.

Pte. G. was wounded on the right side of the neck by a shell fragment on October 24, 1916. He was admitted as a walking case to Casualty Clearing Station, eight hours after being hit, with a temperature of 102° F., pulse 120. The wound was small and situated in the mid-line of the sternomastoid, immediately below the level of the cricoid. There was no external haemorrhage after admission, but the patient said that it had bled freely at first and then stopped of its own accord. A small deep pulsating tumour could be felt; there was a distinct aneurysmal thrill, and also a bruit, which was, however, more easily audible over the temporal artery than through the fascial and muscular layers.

The tumour increased in size for two days, but caused very little discomfort, the temperature and pulse falling steadily. On the third day it was visibly smaller, and continued to decrease in size until the seventh day, when he stated that he felt "champion," and talked and ate with great gusto. On the evening of the eighth day his pulse rose from 68 to 84, and his temperature from 98-6° to 99-3° F., the swelling being slightly larger. He slept well however, and felt better the following morning. He complained of tiredness, and towards evening his respiration
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appeared to be slightly interfered with. The slight irritative cough which had affected him throughout sounded harsher. On the following morning his pulse-rate had dropped from 96 to 82, temperature 99° F., and he felt again a little better, but the swelling had increased considerably towards the root of the neck, and his lips and ears showed a slight degree of cyanosis.

I decided to operate and, through a long oblique incision, first disarticulated and removed a portion of the inner end of the right clavicle in order to have ready access to the artery in the event of rupture of the sac. The common carotid was ligatured about one and a half inches above the innominate bifurcation. The tumour caused the vessels of the neck to curve outwards, while the trachea and oesophagus were pressed over to left of the middle line. The large tumour was then incised, and out flowed several ounces of creamy pus. When this had been mopped away, an inner tumour about the size of a large hen's egg became visible—the actual aneurysm. The pus cavity, developed in the intermediate lamina of the original aneurysmal sac, surrounded the aneurysm on all sides except posteriorly, and stretched up behind the sternomastoid muscle to the mastoid bone. Two fingers could be easily passed between the oesophagus and prevertebral fascia. The aneurysmal sac was then incised and a finger placed upon the bifurcation of the carotid, immediately below which lay an oval slit about fifteen millimetres in length on the anterior aspect. The jugular vein appeared to be unwounded. A distal ligature was applied and the wound left open.

The patient never rallied from the operation, and died four hours later. The jugular vein was found to be intact, but bound down with the vagus nerve in dense inflammatory tissue. Nothing beyond a slight comparative congestion of the left cortex was observable in the brain. A smear of pus showed numerous micrococci and several organisms closely resembling Bacillus perfringens. The pericardium contained 152 cubic centimetres of clear fluid. The small fragments of metal lay embedded in some enlarged deep cervical glands on the left side.

The heart tires with great rapidity under even a small degree of respiratory embarrassment, due to obstruction of the air passages in the neck, whether the cause be aneurysmal or a wound of the larynx or trachea. The facts of the external wound having practically healed over the sternomastoid, the masking of the presence of the pus stratum by the deep fascia and the patient's appearance and sense of well-being until the morning of operation, appeared to justify the hope that a second diminution might occur.

Delay in operation was disastrous to this lad, and the experience of this case would lead me in future to operate at once upon an aneurysm which, having become quiescent, again commences to enlarge.