SURGERY IN ADVANCE OF ROAD-HEAD.

By Major T. G. LOWDEN,
Royal Army Medical Corps.

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Field Ambulances had been moving on a mule pack basis and evacuating their casualties by ambulance mule since the early days of the Gothic Line battle. Field Surgical Units were in the usual course of events kept as integral parts of surgical centres at Field Dressing Station or C.C.S. level but, with an extremely long line of evacuation in mountains, too much delay would result from keeping to this plan. This winter (1944-45) they often returned to the system which was used so successfully in the desert and went up to the M.D.S. to form an Advanced Surgical Centre there. On one of these occasions such an M.D.S. suddenly moved some miles ahead of the road. Five bridges across the narrow valley were blown in succession and there was enough work in rebuilding them to tax all our resources for a fortnight. Meanwhile casualties were occurring steadily and were faced with a ten mile carry by mule to roadhead, and then twenty miles by road. It was apparent that they were likely to suffer severely from such an appalling pre-operative journey and it was therefore proposed that the Field Surgical Unit should go forward to join the M.D.S., moving on a mule pack basis also.

The possibility had been discussed before, in conjunction with another F.S.U. which had been in a similar situation, and loading lists roughed out. Nevertheless, with only eight hours' notice to move, the reorganization had to be prompt. The problem of moving a complete operating theatre under the restrictions imposed by mule transport appears rather formidable, but it is surprising how small a quantity of equipment is really necessary. Operating table, lighting set, tentage, any instruments not in everyday use or absolutely necessary and—not least—personal comforts were ruthlessly rejected. Everything had to be boxed in the standard box or pannier, or else be small enough to be roped up into about the same space. All loads had to weigh the same to within a pound or two so that they would balance one another. Loads had also to be arranged so that the unit could lose a box, or lose a complete mule load, without impairing the efficiency at operation; yet there are few duplicates in the A.F.s. 11248 and G1098 and there was no time to obtain any. Mules, we were told, are temperamental animals and may well reject some of the equipment on their own initiative, apart from the possibility of loss by enemy action.

On each occasion the F.S.U. concerned has arranged its own loading lists and the two were found to differ considerably in detail, while keeping to the broad principle of dividing the instruments, expendables, lighting, and heating apparatus and distributing them all along the line. It was found that this could be carried too far if one were not careful, and the embarrassment of unpacking all boxes at once to get an efficient operating set together had to be avoided. It is not recommended that a hard and fast loading list should be adopted, as surgeons differ in their ideas of what is vital, and requirements vary from time to time anyway. This particularly applies to nursing equipment.

Fourteen mules, each carrying one hundred and sixty pounds, carried operating and resuscitation equipment and nursing necessities to deal with an ordinary influx of a brigade's casualties for five days. Further supplies, at the rate of one mule load for twenty to thirty casualties, could be relayed to the unit during this period. Blood was brought up when necessary by a runner.

The operating team, much to its relief, I believe, was not required to ride the mules. It walked beside them. It was expected to do the loading of the animals, to unload any that fell, and reload when the muleteers had got them on to their feet again. The team readily...
took to the new form of progress, and learned to rope up and load the mules with enthusiasm. Even the six or seven mile march, mostly through knee-deep mud in heavy rain, merely served to spur them on, and at the end of it they set up the operating theatre and were ready for work within two hours of arrival. The loads were protected where necessary from the mud, as some of them were thrown off when any difficulty cropped up. One of the boxes was thrown down a steep slope into a heavily mined area, and it was two days before it could be recovered with the help of the sappers. This was an unanticipated justification for not putting all one’s eggs into one basket.

Sufficient publicity has already been given to the difficult country over which the Gothic Line battle was fought for it to require any further description. The journey for the surgical unit presented no special features which are not experienced by all supplies. The principal hazard and we were unfortunately compelled to keep strictly to a narrow path because of mines. The track had been swept two days before and the side of it was still lined with mines of every description that had been lifted. The operating team was distributed along the mule train to handle the loads when the mules fell, for the muleteers take no responsibility for the loads.

The F.S.U. was attached to the light M.D.S. of an Indian Field Ambulance. Its parent body was the main M.D.S. nearly thirty miles away, and it was constituted when the emergency arose by moving an A.D.S. up on mules to the isolated village. Its equipment also, therefore, was limited by the conditions of pack transport and in fact could be little more than an effective post for staging and triage. It did also maintain plasma and other supplies, was responsible for rationing ourselves and our patients, and was a constant standby for extra blankets and other equipment had we needed them. We are unlikely to forget the extremely cheerful, helpful, and efficient way this Indian unit undertook the extra responsibilities we occasioned, when they were already working hard under difficulties themselves. Their assistance in “showing us the ropes” made the whole thing possible.

They provided us with the two most weatherproof rooms in the building for operating theatre and holding ward. Improvisation had its day in setting out the theatre. Two abandoned plant pot stands made admirable bowl holders and the minimum of buckets was soon added to by the plant bowls themselves and an old tub found in the village. Stoves collected from surrounding ruined cottages reinforced the two Valor stoves which had come with us (each protected by made-to-measure packing cases). It was December and keeping theatre and ward warm was one of the major problems. Window lighting, hammer, nails, and saw were required to effect minor repairs to the building. Tiles were taken from other buildings to improve the roof.

Three pressure lamps arranged at the apices of an equilateral triangle with two to three foot sides give enough light for all ordinary operating. It is necessary to add a headlamp working off dry cells for deep abdominal work. Operations were carried out on a stretcher put on boxes piled to the required height. Only small camp tables could be carried and instrument trays were laid out on other boxes covered with waterproofing.

All F.S.U.s have equipment for resuscitation on the A.Fs. 11248 and this was taken entire. Resuscitation duties were shared between the Anaesthetist and the Company Commander of the Field Ambulance, whoever was more readily available. Two pints of blood came up with the packs on the first day. A small bank was obtained from the relatives of a civilian casualty who was one of the first patients, and more blood was carried up from the main M.D.S. as required. We maintained a bank of two or three pints. It was kept in wet sacking in a cold room with one wall blown out and there was no danger of its temperature rising seriously. Enough plasma and saline were brought originally but there was never any difficulty in relaying supplies.

We were reminded afresh that a sphygmomanometer reading may of itself be no indication of the state of a patient who has been very recently wounded—and may even be deceptive. Men hit by near-by shell bursts came in with B.P.s which were normal, or even slightly raised. Although in some of these the diastolic was low this was not constant. It is well recognized
that these cases are liable to collapse, especially on induction of an anaesthetic, and they were sent to theatre with a drip established. Pressure readings were taken by Captain Reynard as he gave the anaesthetic and in spite of the accelerated drip a fall of 10 or 20 mm. may take place in the course of a few minutes. If a transfusion is already going the fall can usually be controlled. If it is not, the few minutes' delay in "organizing" it may be of great importance.

The unit operated for a fortnight and during this time almost every variety of battle casualty was treated. Two abdomens, two amputations, the usual incidence of compound fractures, and open chest wounds were included. The centre was about three miles behind the F.D.I.s, and casualties arrived by mule, were operated upon, stayed one or two days and, if fit, were evacuated again by mule to the road head. The more serious ones were held indefinitely, of necessity. Once or twice the unit was under very close shell fire and once we finished an operating list by making repairs to the ward and theatre. A certain amount of damage was done, but it was rapidly made good. We never "went out of business" for more than an hour, even after the hit, and fortunately no case was re-wounded.

Operating and nursing under these conditions is admittedly bad from the surgical point of view. Neither patients nor surgical team should be unnecessarily submitted to the distractions of enemy attention in the ordinary course of events. It has been maintained that the disturbance caused even by our own gun areas is detrimental to the recovery of serious casualties. Under these special circumstances, therefore, when these disadvantages were inevitable, it was interesting to observe the reactions of the patients. All were Indians (Indians are by no means more phlegmatic than British troops) and during the worst time it was fortunate that most of them happened to be under anaesthetic for their delayed sutures; but of the others and of all on other occasions there seemed to be little harm done. They seemed to take the noise and disturbance as a matter of course. We never saw any sign of unhappiness other than that occasioned by their wounds.

It is necessary to ensure much more secure fixation of even simple flesh wounds when they are to be evacuated post-operatively by mule, as the journey in a litter is an extremely irregular one and sometimes very severe shaking occurs. A route which is impassable for an ambulance jeep can be guaranteed rough and at times hair raising. In spite of this cases travelled well and arrived at the C.C.S. in good condition. Cases were, however, held at the Advanced Surgical Centre who would have been evacuated had M.T. been available. We did not attempt, for instance, to send a man with a Tobruk plaster down in a litter, though a thoraco-humeral plaster went comfortably. Litters have no fitments by which a Thomas' splint can be stabilized. The Rodgers modification of the Tobruk, which uses a stand for the lower end of the splint (though at least as good as the suspension method on an ordinary stretcher), will not give enough security against bouncing on an ambulance mule. Also, litters are shorter than stretchers, and the splint would overlap. Holding these cases for the arrival of ambulance cars deprived some of them of the prospect of delayed primary suture, but was inevitable.

In fact, we tended to hold all cases longer than we would have done further back. No case which went to theatre was evacuated within twenty-four hours. We wanted them as fit as possible before continuing their ordeal, and also we wanted their plasters to be thoroughly set.

Our amputations were held for four days, their top dressings changed in theatre on the fourth day, and their new dressings wrapped in plaster. Their stumps were also steadied by rolled blankets after they were put in the litter.

Two sucking wounds of chest were held until the ambulance cars were through. One would have been held any way as he had a laparotomy. They were aspirated every second or third day and given intrapleural penicillin in the usual way. There was in fact very little unusual in the type of case or post-operative treatment, except that being compelled to hold cases for this length of time enabled us to do delayed primary sutures on incidental wounds and the two chest wounds. All these did extremely well and my chief regret is that I did
not do it on more of them. When one must hold them fourteen days willy-nilly it is an obvious advantage for them to be evacuated with their wounds quite healed. I saw two chest cases after our return to the C.C.S. when they were on their way down. They were ambulant.

Twenty-seven cases were operated upon, all received within eight hours of wounding. Regimental S.B.s were experiencing serious difficulties in getting cases back to R.A.P., and the statement that the line was three miles away does not give a fair idea of the conditions. There were long hand-carries to mule head over steep and muddy mountain tracks mostly under direct enemy observation. Had these men been sent down to the rear M.D.S. for operation they would have suffered severely, and at least two would have died.

We legislated for considerably more than twenty-seven. The original loads of expendables were less than half exhausted when we were relieved by the completion of a jeep-track to the village. We returned to rear M.D.S. by jeep. A jeep trailer carries approximately three mule-loads. Its payload is a thousand pounds but this weight of surgical equipment is too bulky and would overflow. Four jeeps (two with trailers) were sufficient for the return in comfort; but we left all our expendables behind for the relieving unit.

Nothing was taken or required which does not appear in the A.Fs. G1098 or I1248. We did wish, however, that all the boxes and panniers were furnished with the chains and rings which appear on the Field Medical and Surgical Panniers. These latter are easily loaded on to the saddle and save time when getting ready to start. We were assured it is wrong to keep mules standing in very cold rain for a long time before the journey; and we appreciated that point of view ourselves.