

# To the Sound of the Guns Canadians and Combat Surgery, 1938-1953

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Combat surgery is almost as old as battle itself - the *Iliad* contains many an example of surgical intervention to heal wounds - and in the modern era, the surgeon has become an almost saintly figure in the public imagination, especially in a context where human beings are actively engaged in killing one another. Myth is not far removed from fact, and there is no doubt as to the dedication of these men (women did not enter the field until very recently), but that still begs a few questions: how did they operate (in both the military and medical senses of the word) and how successful were they? This account traces the challenges Canadian surgeons faced in the Second World War and Korea as they sought solutions to problems medical (such as shock) and tactical (operating within range of enemy fire). It is, in effect, a story of civilians attempting to apply their knowledge under the severe stress of battle.

When Norman Bethune left Canada for China in 1938, he could not have gone further in time and space; for he did not travel to the China of Shanghai, or Peiping, or even Nanjing, but to the north-west, where little had changed in hundreds or even thousands of years. There, almost invisible to Europe and North America, pitched battles were being fought between armies of hundreds of thousands of troops as the communist Chinese and the Japanese Empire made war against each other. Bethune had already gained fame helping to organize blood transfusion units in Spain, and his ideological credentials were certainly in order, but the medical challenge that faced him as he made his way across China to join the 8th Route Army

was immense. A formation of 200,000, with 2500 in hospital at any given time, it had available only five doctors and 50 apprentices.<sup>1</sup> The Canadian had his work cut out for him.

Coming to grips with the role of the surgeon in modern war, in the last two months of 1938 the Marxist doctor from Montreal carried out work which would have been familiar to his Huguenot and Scottish forebears. Referring to the prevalence of bone infection in certain wounds, he wrote:

All osteomyelitis cases, involving the thigh, should have amputation as the quickest and most humane method of getting them out of hospital. It should be kept in mind, that, irrespective of whether or not these cases are treated conservatively or radically, that they will never be able to return to the front and their usefulness, as soldiers, is finished. We dislike as much as they, to be forced to amputate, but it is the most merciful procedure. At least we have saved their lives, even though they have only one leg, and in addition, have saved them months and possibly years of suffering - which, even though they endure, will leave them with a leg which is not capable of bearing weight. In addition, to leave them in their present condition, with uncontrolled infection of the bone, is merely to await a slow death from chronic sepsis. So, all would point to amputation or nothing done.<sup>2</sup>

A surgeon of the Napoleonic Wars would have agreed.

In another sphere, however, the Canadian attempted to innovate, and went about it in his usual bull-in-the-china-shop style. On 22 November, he and his staff began operating on 35 wounded soldiers who had spent three days in transit. Bethune reported that he berated the



*Above left: Dr. Norman Bethune performs surgery in an unused Buddhist temple in central Hopei, China, Spring 1939. Above right: Bethune examines a young casualty of war in China, 1938.*

*(NAC PA 114795 & PA 114786)*

brigade commander, who "promised that on the next occasion of a planned action, that our Mobile Unit should be placed immediately behind the regiments in action, to render operative First Aid."<sup>3</sup> A week later the situation had already improved, the Canadian gleefully noting that "We received our first patient at 5:15 p.m. - seven hours and 15 minutes after he had been wounded."<sup>4</sup> In all, he and his team operated on 71 cases, of whom only one, suffering from near-hopeless wounds to the abdomen, succumbed. After further work of this nature, Bethune was much encouraged. "We have demonstrated to our own satisfaction and I hope to the satisfaction of the Army commanders the value of this type of treatment of wounds. It is expected that it will revolutionize our present concepts of the duties of the Sanitary Service. The time is past and gone in which doctors will wait for patients to come to them. Doctors must go to the wounded and the earlier the better. Every Brigade should have at its disposal such a Mobile Operating Unit such as ours."<sup>5</sup> Making a similar report to supporting committees in New York, Hong Kong, and London, the surgeon punctuated his argument with a compelling anecdote.

I will mention the two cases of perforation of the intestine by rifle bullets operated on. The first case was operated on 18 hours after wounded and the second 8 hours after being wounded.

Both cases had almost identical wounds - the bullet entering the abdomen at the level of the umbilicus. Both had ten perforations and tears of the small and large intestine with escape of intestinal contents into the abdominal cavity (including round worms!) Also there was in both cases a big hemorrhage from tear of the mesenteric artery with the abdomen full of blood. Both were operated on at night in a dirty Buddhist temple by the light of candles and flash lights. The first case died the following day but the second made an uneventful recovery, in spite of being transported 60 li [roughly 30 kilometres] every night for the following week on a rough stretcher. The difference between life and death was the difference between 8 hours and 18 hours.<sup>6</sup>

It was, however, the recommendation of a lone Canadian working in the hinterland of the largest continent on earth, and when Bethune died on 12 November 1939 his ideas had not percolated beyond the Chinese army he worked with. They re-emerged independently two years later in a report by Lieutenant-Colonel J.A. MacFarlane, consulting surgeon to the Royal Canadian Army Medical Corps, who noted that "For some time the whole question of operating facilities in the forward area with motorised units has been under consideration."<sup>7</sup> Sweeping battles in Syria and East Africa had shown that Casualty Clearing Stations (somewhat rearwards in the casualty evacuation organization, behind stretcher-bearers, Regimental Aid Posts,

Advanced Dressing Stations, and Main Dressing Stations) were incapable of sufficient mobility to operate on a flowing battlefield, while Field Ambulance units, though well-mounted on a variety of vehicles and operating close to the front, lacked the necessary equipment for anything but the most rudimentary surgery. The solution was obvious: form a mobile operating unit, perhaps with sufficient dressings and supplies for 30 to 50 surgical operations, capable of being carried in a few trucks. Thus, in a rapid campaign, patients could be transported by ambulance to some form of forward operating post before being evacuated further to the rear.

A colleague of MacFarlanes, a divisional Director of Medical Services, R.M. Luton, agreed with the need for such a unit in "a campaign of rapid movement," suggesting the army acquire specially constructed vehicles on 3-ton chassis. Other equipment would include a generator for keeping lights burning, a 60-gallon water tank, sufficient linen for 30 to 40 operations, and a 15-hundredweight truck for carrying baggage, rations, and personnel. The surgeon and nursing sisters would travel in a station wagon. As for staff, he suggested a surgeon "who must have sound training and experience in all branches of traumatic surgery, preferably young, and must be of good physical condition."<sup>8</sup> Completing the team would be another surgeon with hospital experience in traumatic surgery, an anaesthetist, two nursing orderlies, and two nursing sisters, though the latter would only join a given unit at the discretion of the Corps' Deputy Director of Medical Services. The military hierarchy was uncomfortable with the possibility of women working close to the front.

In the first days of 1942, therefore, it seemed that the creation of forward surgical units had been worked out in every detail, but the very concept of such an organization was still a subject for debate, and the proper location for a surgeon was not, in the eyes of some, near the fighting. One divisional Deputy Adjutant General, Beament by name, insisted that:

In clearing a battle field, the first consideration is, as far as possible, to evacuate surgical cases to as far back a fixed hospital installation as possible. The theoretical ideal, therefore, would be if one could evacuate directly from collecting posts in the battle area to a general hospital...This desirable feature of making long

evacuations to rear areas is in many surgical cases considerably aided by the development in medical science. I am now informed that in many cases of gunshot wounds it is now possible to pack the wounds with a sulphanilamide dressing and the wounded man will keep without operative treatment and without danger of gangrene for about 48 hours.<sup>9</sup>

Beament thus concluded that surgeons would be needed in the rear, not in the battle zone, though there were still arguments for some form of forward surgery, if on a small scale. For "cases will undoubtedly occur, where early operative treatment would result in the eventual recovery of the soldier...Further, it seems to me that it would be unfortunate, from the point of view of morale, if the idea were to become prevalent that surgical cases, who could not wait to reach a rearward installation, were abandoned to die." He therefore supported the creation of one surgery team per division.

Thus by June 1942 the function and organization of such a unit was ready to move from theory to practice, MacFarlane describing its role as follows: "Mobile warfare has presented a new problem to the surgeon, he must put himself, his assistants and the essentials of equipment into vehicles which can move [as] quickly as the armoured division which he now serves. He must be prepared to set up his theatre in whatever shelter he can find, and do it quickly. He must be able to disband it rapidly and move forward to another area on short notice, and unfortunately sometimes he must be ready to move it rearwards out of enemy hands when the battle sways against his comrades."<sup>10</sup> The consulting surgeon to the Canadian Army concluded that "I am convinced that something of this sort is the answer to the problem of bringing early surgery to the wounded in this war."

The result was the Field Surgical Unit, or FSU, though it would be more than a year before Canadian surgeons followed troops into battle. (Dieppe being designed as a raid, all casualties that did not fall into enemy hands were dealt with in hospitals in Britain.) In Operation Husky, the landings in Sicily of 10 July 1943, one practitioner reported how "John R. and I started operating about 24 hrs after landing - i.e. a filthy stable - using the equipment that an English FSU had brought ashore in packs on their backs -



*At a regimental aid post north of Ortona in early 1944, a wounded soldier, with multiple shrapnel wounds peppering his back, undergoes treatment at the hands of Corporal Quinton Carsell. Note the use of a hypodermic, which would not have been allowed in the hands of other than a nurse or doctor in the civilian world. (NAC PA 193909)*

we next worked in a wine cellar, then a house, a tent, a school, a cathedral and finally a school."<sup>11</sup> Their task was a reflection of war as a whole, cases arriving in batches so that "our work is anything but steady - periods of rush alternating with longer periods of idleness." Job satisfaction was ephemeral, surgeons having no opportunity to follow up on their cases after they were evacuated, "so cannot tell whether our work is good or bad." Their ability to deal with some traumas, however, was sadly clear; six abdominal wounds died out of 11 who reached their hands, as did five of 15 penetrating chest wounds. And, if they needed any reminding, infection still threatened to kill the patient of the most skillful surgeon.

Nos 1 and 2 FSUs supported Canadian ground forces in their advance across Sicily and, as the Germans completed their evacuation of the island, there was an opportunity to derive what lessons they could by those whose task it was to patch up the "accidents" of war. Between them, the two units performed 229 major surgical procedures.

The types of cases were mainly serious extremity wounds, abdominal cases, sucking wounds of

chests, and burns. The fatal cases were for the most part abominai cases, sucking chest wounds, severe bums and cases of clinical gas gangrene. 24 Abdominal cases were operated on at an average of 7.7 hrs after being wounded. The mortality rate was 54%. Only 2 cases seen within 24 hrs of injury were refused operations because it was felt they could not survive any surgical procedure. The mortality in sucking wounds of the chest was 22% (5 deaths In 23 cases). The mortality In wounds of extermltis [sic?] including burns was 11 %.<sup>12</sup>

Most of the burn victims were undoubtedly tank crews, though the worst mortality rate was to gas gangrene, four of five patients who suffered from this First World War horror dying of its effects; penicillin use from f943 on would prove only a partial remedy.

As Bethune had noted four years earlier, competent surgery is not enough - the patient needs a high level of post-operative care if he is to survive. So, as the Canadians moved from Sicily to Italy and began making their slow, slogging way northwards, their medical units worked to get more of their services forward. An added incentive to performing some surgeries as close to the front as possible came with the creation of transfusion teams, small units that

usually set up shop near dressing stations. Through their ministrations, they saved the lives of many who would otherwise have died of shock brought on by blood loss, but to take advantage it was best that operations be performed before the patient was transported any great distance, bumping over the tracks of Italy often sending the patient into a relapse. Even after surgery, not all patients could be moved without serious risk, hence the need for forward nursing.<sup>13</sup> According to G.W.L. Nicholson, "To be a nursing sister serving in a field surgical unit, close enough to the forward troops to be within range of the enemy's guns, was an envied role to which few nurses did not aspire."<sup>14</sup>

By the time Canadian medical units still in Britain began their final preparations for the landings in Normandy, then, they had the benefits of lessons learned in Sicily and Italy. One of these was reflected in the fact that there were two FSUs per division instead of one. Another was seen in training, as John Burwell Hillsman later related in his autobiography, *Eleven Men and a Scalpel*.

Our first consideration was to teach the men to erect the tent under varying conditions. We spent three weeks literally living in mud, putting up the tent and taking it down. The canvas was *wet* and heavy but we soon got to the point where we could set up in blackout conditions in twenty minutes and take down in fifteen...

At nights we practised night driving. Each man was given map references and required to find his way to various locations in the blackout by directing the driver what roads to take and what turns to make... I considered the men sufficiently trained in map reading when I noticed they invariably managed to get lost within a few hundred feet of a pub.<sup>15</sup>

As for more sophisticated training, "On the first of March, 1944, things began to look up. The invasion was obviously approaching. Headquarters ordered all seven of the Field Surgical Units along with two Field Transfusion Units into the field to be attached to a Field Dressing Station at Cranleigh. The next month was spent practising combined set ups with this

*Preparation for surgery begins while en route to a field surgical unit. Here, Private Nicky Deagle administers plasma to a casualty to prevent his sinking into shock. Ortona, Italy, 15 January 1944. (Photo by Alexander Sturton, NAC PA 144980)*

Unit and in combination with other Field Dressing Stations."<sup>16</sup>

Hillsman and his team were put to work after the landings of 6 June, and their first operation can serve to demonstrate not only the surgical and other knowledge necessary for the task, but the leadership skills required as well.

The time came for us to perform our first operation. The boys were standing by scrubbed and grinning but it was obvious that they were a little nervous. I went into the Resuscitation Tent and had a talk with the Transfusion Officer. The tent was full of wounded but I chose a trivial wound of the arm for our first case. I didn't want to take on a big case until the men's nervousness had cleared a bit. The case was brought in. The arm was painted and the operation began. Soon we were through. As I put on the bandage I noticed the men were laughing and joking among themselves, proud as peacocks. I slipped into the Resuscitation Tent and chose an abdominal case. It went smoothly. From then on we took the cases as they came. By morning we were a weary, happy Unit - and I knew I had a team that could work with the best.<sup>17</sup>





*Regardless of the ruggedness of primitive conditions, aseptic surgery was still the rule, and all the necessary instruments were prepared/or each case. (Photo by Alexander Stirton, NAC PA 196286)*

That he could rely on people in whom he had confidence was fortunate, as the doctor would face very difficult times in the months ahead.

Two examples will suffice. The first occurred in the ten days leading up to the capture of Caen on 9 July, when Hillsman and his team "changed from mere soldiers to war-wise veterans," a process all medical personnel shared.

We saw the tragic sights from which we were never to be free for ten long months. Men with heads shattered and grey, dirty brains oozing out from the jagged margins of skull bones. Youngsters with holes in their chests fighting for air and breathing with a ghastly sucking noise. Soldiers with intestines draining feces into their belly walls and with their guts churned into a bloody mess by high explosives. Legs that were dead and stinking - but still wore a muddy shoe. Operating floors that had to be scrubbed with lysol to rid the Theatre of the stench of dead flesh. Red blood that flowed and spilled over while life held on by the slender thread of time. Boys who came to you with a smile and died on the operating table. Boys who lived long enough for you to learn their name and then were carried away in trucks piled high with the dead. We learned to work with heavy guns rocking and blasting the thin walls of our tent. We learned to keep our tent ropes slack so that anti-aircraft fragments would rain down harmlessly and bounce off the canvas. We became die possessors

of bitter knowledge that no man has ever been able to describe. Only by going through it do you possess it.<sup>18</sup>

If at times it was the constant grind of fighting off death that took its toll, on other occasions it could be an individual patient that reminded the surgeon of the limits of modern medical science. Hillsman particularly remembered one difficult case of internal bleeding.

The anaesthetist bent over him. I put on my gown. The painting and draping were quickly done. I looked at the anaesthetist. He nodded. A quick incision...Furious hemorrhage...I can't see! He's bleeding too fast...Suction, quick! ...Still can't see...A pack! Press hard! ...It's still flowing...Big forceps, quick! ...I'll have to clamp blind...Oh God, I hope I get it...It's no use. It won't work.. To the main vessel quick...Anodier incision...Rapid dissection...The vessel is tied.. Back again to the first incision. It's slowed up but not stopped...Suction! Pack! Sponge! Quick! ...I straightened up...A sigh of relief. It's stopped. A quiet voice as from the distance, "I'm afraid he's gone."<sup>19</sup>

With a fatality rate approaching 20 per cent, the anaesthetist's words were often to be repeated.

Though the FSUs were made up of experienced personnel, the Normandy campaign could still offer much that was novel - if

*On occasion, however, other tools were put to use, such as the spoon in this case. Italy, January 1944. (Photo by Alexander Stirton. NAC PA 196285)*



gruesome. One characteristic of Operation Overlord was the reliance on tactical air power, including the use of heavy bombers to support the advance by pounding German defensive positions. The technique was, however, risky, and on two occasions in August four-engined aircraft unleashed their loads on their own troops, what Hillsman described as "our two worst surgical experiences." Being close to the front line, as they were supposed to be, he and his team found every bed and stretcher filled within an hour of the bombs having dropped, with two hundred wounded lying on the ground outside the operating tent waiting for help. "The worst feature of these cases was the "blast" lungs. I lost ten patients in a row on the operating table and of twenty cases done in two operating sessions sixteen died within twenty-four hours. The mortality was so high one capable young surgeon became so depressed that he asked for a transfer back to a Base Hospital."<sup>20</sup>

The Normandy Campaign, costing the lives of over 5000 Canadian soldiers, was Canada's bloodiest battle of the Second World War, which accounts for the experiences detailed above, and when the front broke in the last days of August, medical personnel found themselves busier than ever. As Hillsman later related, "The situation was difficult. We were the only Surgical Unit open to cover the Army moving forward. We had to handle all the casualties for at least twenty-four hours. I had no relief surgical team and no Transfusion Unit with me. We hadn't any blood or penicillin for the wounded. What's worse we hadn't an icebox to keep the blood in and it would only last twelve hours in the heat. . . We set up the canvas and just as we started to sterilize the instruments the first ambulance rolled in. For thirty-six hours we operated continuously without sleep or rest." When it was all over, "I slept like a drunken man."<sup>21</sup>

As the army moved forward, surgical teams fell farther and farther behind, ammunition, food, and fuel being top priorities, forcing medical units to stay off the roads. "Fortunately the casualties were light but those we were getting were in bad shape and a few arrived dead who should never have died at all,"<sup>22</sup> Hillsman complained, but commanders thought they would lose fewer lives by rushing up combat supplies and troops to bring the war to an early

conclusion than they would through delayed medical attention. As we well know, the gamble failed to pay off, and the war went on for nine more months, but the military leadership did not know that at the time. As for the doctors and their staffs, having been formed into units designed to perform operations as quickly as possible, they had to carry out their work in the knowledge that many of their patients had come a long way - and already begun their journey to death - before making it to the operating table.

Meanwhile, as September neared its end, medical units began to ponder the lessons of the Normandy campaign, and submitted reports to enlighten their superiors. Discussion over the proper location of Field Surgical Units continued, though the consensus from the FSUs themselves was that they should co-locate with Field Dressing Stations - just behind the front - rather than with Casualty Clearing Stations further back. Proximity to the fighting was not the only consideration in arriving at such a conclusion, it having been found that a CCS, with its varied responsibilities of sorting, transporting, and accommodating patients, was not able to handle the number of cases emerging from an FSU during peak periods, while the FDS could allocate all its resources to exactly that task.<sup>23</sup> One correspondent went so far as to suggest that "FSUs and CCSs are incompatible [sic]."<sup>24</sup>

Of course, practitioners also argued that they had to be close to the front because time was of the essence, though by the end of the Normandy campaign some were more specific, one FSU suggesting six hours, or 10 to 15 miles from the scene of injury, should be taken as maximums.<sup>25</sup> Another unit noted a paradox, the mortality rate among chest cases *increasing* when it operated far forward, though the reason why was clear; when located further back, it saw very few such wounds as victims died before they could make it to surgery.<sup>26</sup> As for abdominals, these patients had to be resuscitated immediately, often requiring two to four bottles of blood and plasma, and then operated upon as soon as they were stable. "Delay," one FSU reported, "is only asking for a fatal result."<sup>27</sup> As we have seen, the death rate was already high enough, about ten per cent within 24 hours, half of them from shock, according to studies done in Italy at this time.<sup>28</sup>

In both the Mediterranean and north-west Europe, doctors agreed that competent surgery was not enough, and continued to insist on the effectiveness of forward post-operative care, preferably by nursing sisters whose training was near-perfect for the task. A report from the Italian theatre pointed out the problem in great detail, especially as it related to abdominal cases.

Most officers on post operative wards find their hands full juggling with gastric suction, aspirating chests and in attending to the general needs of their patients. During the night except in cases of real emergency no medical officer is on the wards. Even during the day time patients just returned from the OR are left to themselves to come out of the anaesthetic. Blood pressures are rarely taken and unless the patient is in extremis no particular attention is paid to him. It may be that if the same careful observation of pulse, blood pressure etc were made as in the post operative ward and the same energetic type of resuscitation were carried out that a considerable number of serious or potentially serious cases might be saved from a rapid decline and death. This raises the question when does resuscitation cease? When the patient goes to OR? at the end of operation? - or when the

patient is safely past any danger of post operative collapse?

Careful observation combined with active methods of resuscitation during the 6-12 hours immediately following operation would seem to be the means by which these high mortality figures can most readily be reduced. If this proves true it is not unlikely that some will be saved from "Shock" to die of other causes.<sup>29</sup>

An FSU in Normandy added that "Good nursing is essential and rates in importance with resuscitation and the operation. Under the supervision of nursing sisters this care is certainly improved."<sup>30</sup>

While commanders and policy makers sorted out the lessons of mid-1944, the war marched on and casualties continued to mount. Even four months after arriving in north-west Europe, Hillsman still found some injuries shocking. "Tank wounds were horrible things to treat. They are always accompanied by more or less severe burns and are multiple in nature. The wounds are not usually from shell fragments but one digs out pieces of armour plate and large lumps of hard rubber and nuts and bolts."<sup>31</sup> It was,

*As with pre-op, so with post-op, blood was administered whenever it was deemed necessary, creating a heavy demand.*

(NAC PA 196287)





*Nursing sisters, because of their in-depth training in civilian life, were deemed crucial at all stages of the surgical process. Here, Lieutenant Nursing Sister Lillian White turns a school into a surgical centre.*

*(NAC PA 196288)*

however, the pace of operations that took the worst toll on surgical staff, and the symptoms of stress slowly became acute. "One man started fainting at the sight of blood. I had to send him back. Another got quite surly and unco-operative. He was one of my best men and I tried to reason with him without too much success. I kept him, hoping he would straighten out. A third youngster began to talk and laugh with a hint of hysteria. The Corporal reported he had heard him sobbing in his sleep several times. He would have to be watched carefully."<sup>32</sup> The surly staff member eventually had to be returned to England, though the young soldier showing signs of hysteria begged for a second chance and served with the unit until the end of the war.

Medics in north-west Europe, therefore, must have been thankful for a lull in the

campaigning that began in the first days of November, so that by the end of 1944 one FSU could report that it was "A fairly dull 3 months from the surgical standpoint."<sup>33</sup> As the Christmas season set soldiers' minds to home and happier times, surgical operations fell into a routine of treating injuries and dealing with wounds resulting from raids, firefights, shelling, and Hitler's weapons of revenge, the infamous Vis and V2s. At a different level, "Considerable controversy still goes on over the siting of FSUs,"<sup>34</sup> though as we have seen the units themselves had been insisting for some time that they had to be as far forward as possible. They had allies, 21 Field Dressing Station, for example, voiced dissatisfaction with its dual role as an advanced dressing station and recovery centre, the staff of the former unable to take good care of patients in the latter during busy periods.

Instead, it suggested it act as an Advanced Surgical Centre, with surgical teams and transfusion units attached. "This would push surgery and resuscitation farther forward. This is considered necessary."<sup>35</sup>

In arguing to be allowed to operate closer to the front, surgeons and their supporters were no doubt thinking of their most difficult cases - the fatality rate still hovering around 20 per cent. As the Allies crossed the Rhine on 23-24 March, Hillsman noted that his unit had treated its 1000th patient; though a milestone, the now-experienced surgeon saw no cause for celebration. "It was appalling to think that nearly two hundred men had died under my knife in the last nine months,"<sup>36</sup> and there was little possibility of improvement. After First Canadian Army fought its way through the Rhineland in February and March, Major G.F. Pennal of the 3rd Casualty Clearing Section calculated that a third of those suffering from combined chest and abdominal wounds died of their injuries, partly the result of post-operative complications due to respiratory infection on admission or exhaustion from prolonged fighting.<sup>37</sup>

Number 3 Field Surgical Unit's experiences were similar as it reported a fatality rate of 19 per cent for wounds to the abdomen, accounting for almost all of the 6 per cent who died of 116 major operations carried out from January to March. It also noted how combat surgery was a continuing learning experience.

During the past quarter we have felt, more than ever before, how specialized our role as forward surgeons had become. Almost unconsciously we find ourselves thinking more and more of the wound itself- the type of missile, it's course and what it would hit or miss - the surgery itself being almost automatic and simple. It is surprising to find how accurate one may be and how canny one's decision in the thoraco-abdominal or glueto-abdominal wound, and yet there are surprises at every turn and one's best armament is an open mind. It is, in fact, the only way to remain sane!<sup>38</sup>

Another was to focus not on those who died, but on the majority who lived, 5 FSU reporting an abdominal fatality rate of 18.3 per cent, but suggesting that "Even if 5% died after leaving us the results are still good."<sup>39</sup> In the first three months of 1945, 162 cases survived out of 198, so that Major R.B. Eaton, the unit's commander

and chief surgeon, could report that "On the whole it has been most gratifying."

A positive attitude was perhaps the best armour for what was to come, the Canadians having been given the task of liberating the Netherlands, keeping them in battle from the end of March to the first days of May. Number 10 FSU reported that "April has been the Unit's record month,"<sup>40</sup> it having to move six times, mainly in pursuit of 4th Canadian Amoured Division. "All of our cases ranked high in priority, the bulk of them resulting from the battles of the Kusten Canal area. Ambulances carrying both incoming and evacuated casualties were obliged to negotiate extremely difficult road conditions - delays were inevitable. The severity of the wounding was the greatest we have yet encountered and exceeded that of our expérience at Bedburg," where the unit had served during the peak days of the Rhineland campaign, in late February and early March. "As a comparison of volume - at Bedburg the Unit operated on a total of 42 cases in 22 days, of these 27 were abdominals or thoraco-abdominals; at Friesoythe the Unit operated on a total of 49 cases in 11 days, 29 of the cases being abdominal or thoraco-abdominal. There were 15 deaths during the month, the majority of these had sustained a degree of trauma precluding survival."<sup>41</sup> Working conditions were as poor as the war-ravaged country the unit moved through, buildings having no glass in their windows; as a result rapid resuscitation was difficult and some operations were long delayed. To aggravate matters, liquid plasma was not available and the use of dry plasma - a very recent development - led to numerous negative reactions. The German surrender of 4 May must surely have come as a relief.

The end of the war in Europe was not, however, the end of our story; for though Canadian surgical units did not serve in Asia against the Japanese, they did make their way to Korea after war broke out there in 1950. Canadian troops began arriving in early 1951, though at first any forward surgery they required was done by American or Norwegian specialists at the now-famous Mobile Army Surgical Hospitals. Then, with as little delay as possible, they were funnelled into Canadian channels, including a Canadian Section at the British Commonwealth Hospital in Kure, Japan.<sup>42</sup> Later,



*A casualty being evacuated by helicopter in Korea. The helicopter helped to revolutionize medical care by decreasing the time between wounding and treatment.*

*(NAC PA 196754)*

Number 25 Canadian Field Surgical Team (FST) made its way to the theatre, operating with the 8055th MASH in mid-1952, then transferring to the 25th Advanced Dressing Station.<sup>43</sup> Completely set up and running by 25 August, the team was ready to receive patients from Commonwealth field ambulances as well as from the 8055th and Norwegian MASHs. "As X-ray facilities were still not available at this unit any casualties sent here were generally first sent to either the American MASH or Norwegian MASH where X-rays were taken and debridement [removal of dead tissue] carried out. At times some of these casualties were evacuated to the FST for their initial surgery. However, as intended, the prime function of this unit continued to be elective surgery and delayed primary suturing to avoid evacuation to Japan. By this means it was possible to return the soldier to his unit much sooner."<sup>44</sup> Priorities were thus the same as they had been since the early days of combat medicine; above all else the surgeon's duty was to get as many wounded men as possible back into the fighting.

A cease-fire went into effect in Korea in mid-1953, allowing practitioners to ponder what difference their work had made. In *the Boer War*, the British had lost 93 of every 1000 men wounded, and in the First World War the Canadians saw 114 per 1000 die after initial treatment. In the Second World War that figure dropped to 66, and then dropped again to 34 in the course of the conflict in Korea. Surgery, however, did not explain the improvement from one mid-century war to another, as "Surgical practices in the management of wounds were much as they were in 1945."<sup>45</sup> Rather, other factors, such as helicopter evacuation, armoured vests, and antibiotics helped give the wounded soldier a better chance of survival. (One should not, however, exaggerate the impact of the helicopter. From July 1951 to February 1952 only 31 Canadians were evacuated this way.)<sup>46</sup>

Certain techniques aside, in the popular imagination the MASH units of Korea were the epitome of combat surgery, but as we have seen they were in fact examples of an organization that had been in place since the late 1930s. With

the formation of FSUs and their despatch to Sicily, Canadians admitted that evacuation methods had reached their peak of efficiency, and if soldiers were to be better served by military surgeons, the latter would have to move closer to their patients. Surgeons, though non-combatants, had nonetheless to move to the sound of the guns.

### Notes

1. National Archives of Canada (NAC), Manuscript Group (MG) 30, D187, Hazen Sise Papers, v.35, f.2, Bethune to General Nieh, 7 December 1938.
2. *Ibid.*, Bethune to Hu Chia Ch'aun, 17 November 1938.
3. *Ibid.*, Bethune to General Nieh, 7 December 1938.
4. *Ibid.*
5. *Ibid.*
6. *Ibid.*, Bethune Report to Committees in New York, Hong Kong, and London, 1 July 1939.
7. NAC Record Group (RG) 24, v. 12,621, 11/MobOper/1, MacFarlane to DMS, 22 November 1941.
8. *Ibid.*, DMS to DAG CMHQ, 19 January 1942.
9. *Ibid.*, Beament to BGS, 16 February 1941.
10. NAC MG 30, B85, Harris Papers, v.5, MacFarlane to Cdn Army OS, 15 June 1942.
11. NACRG24.V.12.621, 11/Sicily/1, Roche to MacFarlane, 16 August 1943.
12. NAC RG 24, v. 12,642, 11/Sicily/1, Report on Activities of 1 & 2 Cdn FSUs during the Sicilian Campaign, 18 August 1943.
13. NAC RG 24, v.12,596, 11/3 FSU/1, Monthly Report, January 1944.
14. G.W.L. Nicholson, *Canada's Nursing Sisters* (Toronto, 1975), p.145.
15. John Burwell Hillsman, *Eleven Men and a Scalpel* (Winnipeg, 1948), pp.12-13.
16. *Ibid.*, p. 13.
17. *Ibid.*, pp.34-35.
18. *Ibid.*, p.35.
19. *Ibid.*, p.37.
20. *Ibid.*, p.43.
21. *Ibid.*, p.51.
22. *Ibid.*, p.66.
23. NAC RG 24, v.12,596, 11/10 FSU/1, Quarterly Report, 30 September 1944.
24. *Ibid.*
25. *Ibid.*
26. *Ibid.*, Quarterly Report, 9 September 1944.
27. *Ibid.*
28. NAC MG 30, B85, Harris Papers, v.5, A.L. Chute, Analysis of Abdominal Casualties in Advanced Surgical Units, 30 September 1944.
29. *Ibid.*
30. NAC RG 24, v. 12,596, 11/5 FSU/1, Quarterly Report, 30 September 1944.
31. Hillsman, p.89.
32. *Ibid.*, p.34.
33. NAC RG 24, v.12,596, 6 FSU, Quarterly Report, 31 December 1944.
34. NACRG24, v.12,593, 11/23 FdAmb/1, Quarterly Report, 31 December 1944.
35. NACRG 24, v. 12,594, 11/21 FdDressing Stn/1, Quarterly Report, 31 December 1944.
36. Hillsman, p.129.
37. NAC RG 24, v. 12,578, 11/3 CCS/1, Quarterly Report, 31 March 1945.
38. NAC RG 24, v.12,596, 11/3 FSU/1, Quarterly Report, 31 March 1945.
39. *Ibid.*
40. NAC RG 24, v.12,596, 11/10 FSU/1, Surgical Report, 4 May 1945.
41. *Ibid.*
42. NAC MG 31, J7, Sneath Papers, v.3, Papers Circulated to Members, No 87.
43. NAC RG 24, v. 18,398, No.25 Cdn Field Surgical Team, August 1952.
44. *Ibid.*, October 1952.
45. NAC MG 31, J7, Sneath Paper, v.3, Papers Circulated to Members, No 87.
46. NAC RG 24, v. 18,396, 25 Cdn FDS, August 1952, Appendix 9.

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