

Original Article

Aggressive surgical palliation for advanced girdle tumours

Andrew Burd, K. C. Wong¹, Shekhar M. Kumta¹

Division of Plastic, Reconstructive and Aesthetic Surgery, Department of Surgery, ¹Division of Orthopaedic Oncology, Department of Orthopaedics and Traumatology, The Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong

Address for correspondence: Dr. Andrew Burd, Division of Plastic, Reconstructive and Aesthetic Surgery, Department of Surgery, The Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong. E-mail: andrewburd@surgery.cuhk.edu.hk

ABSTRACT

Background: The surgical management of advanced, incurable, malignant disease presents particular ethical and technical challenges. The clear goal is palliation and the surgical futility must be avoided. This case series presents some particular challenges in end-of-life surgery. **Materials and Methods:** Fifteen patients referred with advanced malignant disease involving a limb girdle were reviewed. **Results:** In one case, a patient pleaded for surgery after initially requesting a delay to seek treatment from a Chinese Traditional Herbalist. The increase in tumour bulk led to problems with surgery and the patient died in a hospital a few weeks later. This case illustrates 'futility' not recognized and encountered. The remaining 14 patients exhibited positive palliation with improved quality of dying and appreciation expressed by patients, relatives and staff. **Conclusion:** In selected cases, with a skilled and experienced surgical team, patients with advanced malignant disease can still benefit from aggressive surgical palliation. The margin of error is small between palliation being attempted and futility being achieved. This considerably adds to the challenge of end-of-life surgery.

KEY WORDS

Futility; palliation; quality of life; surgery

INTRODUCTION

Who would choose to lose an arm or a leg because their quality of life was so poor? Who would choose to accept the very real risk of death, albeit suddenly and peacefully whilst under anaesthesia in order to gain a few months, perhaps longer to experience the joy of life rather than the agony of dying?

In this paper, we present 15 such patients who had

advanced malignant disease involving a girdle region. Cure was no longer an option^[1] and with the support of their families they made the fully informed consent to undergo either a hind or forequarter amputation. All patients survived and without exception all patients and relatives expressed gratitude for the surgery. In 14 out of the 15 cases, there was a clear and appreciable improvement in the quality of life not only of the patient but also for the relatives. This surgery fulfils the criteria for palliation proposed by the World Health Authority (WHO)^[2] and also the criteria for surgical palliation as proposed by Wagman.^[3] The 1997 WHO proposal included the term "impeccable assessment" and this has to be the crux of surgical palliation. There is a very fine line between surgical palliation and surgical futility. A key element of surgical palliation in girdle tumours is the complete removal of local disease. This surgery requires considerable technical expertise based on experience and multidisciplinary input.

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However, there is the danger that without the “impeccable assessment” and clinical honesty of the mature surgeon that instead of surgical palliation, surgical futility could be the outcome. Surgical futility is where an operation is performed but the patient experiences no perceived benefit as a result. Indeed symptoms persist or additional complications occur. Milner *et al.* undertook a prospective evaluation of the outcomes of palliative surgery and recognized the complex issue of determining benefits.^[4] Whilst many patients have been evaluated on the basis of curative-intent cancer treatments, there have been very few prospective trials of palliative interventions. Perhaps this is not appropriate and reflects a more paternalistic approach to surgical decision making; that is to say that curative surgery is very much based on defined practice which may be stated in principle but is generally, validated by evidence of outcome. Palliative surgery is however more context bound, assessment of success or failure of intervention is far more elusive and the ethical dimensions of the decision-making processes are more complex.^[5] The concept of surgical futility is thus different from that of medical futility. The latter term arose in the 1980s in the context of limiting the demands of patients. It was a justification for omission of treatment and has been eloquently discussed by Schneiderman and colleagues.^[6,7] Surgical futility is more a reflexion on an inappropriate act of commission and fits in with the notion developed by Moratti^[8] that ‘futile’ treatments interfered with the ‘natural’ process of dying, constituted a waste of resource and was a violation of professional standards. This view must not eclipse the WHO definition of palliation. Forequarter amputation is regarded as acceptable for the cure of upper limb sarcoma.^[9,10] There has been a debate in the literature about the justification for performing such a procedure for palliation. Reported series are small, but again affirm significant improvement in quality of life, albeit for a limited period. This is appreciated by the patients and relatives and there can be no question that this fulfils the WHO criteria of palliation. There are many excellent ways of managing the symptoms of those with advanced malignant disease. However, there are those who do not respond and the palliative care team may want to explore other options. Our wish in presenting this series is to promote an awareness of surgical options in highly selected patients to allow death with dignity.

MATERIALS AND METHODS

The details of the cases are presented in Table 1. In all cases, patients and relatives were fully counselled regarding the

expectation, risks, and complications of the surgery. In all of the 15 operated cases, the risk of uncontrollable bleeding was raised because of tumour involvement of major vessels. In all cases the possibility of ‘death on the table’ was specifically raised and discussed in the consent procedure and in all cases patients expressed the opinion that their current quality of life was so poor as to make that risk acceptable.

CASE REPORTS

Case 5

A 39-year-old female presented with a fibrosarcoma affecting the right shoulder. Imaging of the tumour suggested that it would be resectable using a forequarter amputation. The patient and relatives were very concerned about the perceived mutilating surgery and expressed a wish to seek alternative treatment (Chinese Traditional Medicine). She represented several months later with a tumour that was significantly larger, with lung metastases, and in constant pain [Figure 1a]. The patient now pleaded for surgery to remove the ‘pain’. An extended forequarter amputation with resection of involved chest wall was undertaken with both subclavian vessels being ligated. The procedure was complex and when the amputated limb was eventually moved to the side table there had been a prolonged ischaemic time of 6 h. It was not possible to close the surgical defect despite mobilizing the surrounding skin [Figure 1b]. A skin flap was raised from the forearm based on the brachial vessels [Figure 1c]. End to side anastomoses were performed to the internal jugular vein and the common carotid artery. The flap appeared purple in colour despite the patency of the anastomoses [Figure 1d]. Following overnight observation, there was no improvement in the flap circulation so it was removed and replaced with a free TRAM flap used to close the defect. The patient developed bilateral malignant lung effusions and eventually died 6 weeks after the original surgery. Whilst the relatives did not express regret at having sought the surgery, there was a consensus that the patient had not received a significant benefit from her surgery. The patient did remain on narcotic analgesics during the postoperative period.

Case 11

This 37-year-old female had suffered from epitheloid sarcoma of her pelvis for 10 years [Figure 2a]. She developed distant metastases and massive local recurrence despite multi-modal treatment. The relentless growth of the tumour with pain, necrosis and smell caused her to accept a major lifestyle change. She could not sit or lie down. She

Table 1: The demographic and surgical details of the consecutive case series

<i>Patient</i>	<i>Sex/ Age</i>	<i>Diagnosis</i>	<i>Indication</i>	<i>Excision</i>	<i>Reconstruction</i>	<i>Final outcome</i>
1	M/12	Osteosarcoma of pelvis	Septicaemia	Extended hemipelvectomy	Free fillet flap leg	DOD 4 months
2	F/61	MFH left arm	Necrosis, pain? curative	Forequarter amputation with chest wall resection	Fillet flap with breast advancement	NED 96 months
3	F/41	Osteosarcoma pelvis	Necrosis, pain	Hindquarter amputation	Fillet flap from thigh	NED 60 months
4	F/54	Radiation induced sarcoma	Necrosis, pain	Hindquarter amputation	Fillet flap thigh	DOD 14 months
5	F/39	Right shoulder fibrosarcoma	Pain	Forequarter amputation + chest wall resection	Free fillet flap Free TRAM flap	DOD 6 months
6	M/37	MFH left parascapular region	Necrosis, curative	Wide local excision	Ipsilateral latissimus dorsi flap	NED 54 months
7	M/59	Chondrosarcoma pelvis	Necrosis, pain	Hindquarter amputation	Fillet flap anterior thigh	DOD 19 months
8	M/49	Neurogenic sarcoma right brachial plexus	Pain	Forequarter amputation	Fillet flap upper arm	DOD 11 months
9	F/49	Radiation-induced sarcoma right chest wall	Necrosis, pain	Resection right chest wall and ribs	TRAM flap with chest wall reconstruction	DOD 9 months
10	F/58	MFH right deltoid	Necrosis, pain	Wide local excision	LD myocutaneous flap with functional reconstruction of deltoid	NED 60 months
11	F/37	Epithelioid sarcoma pelvis	Necrosis, pain	Extended hemi-pelvectomy	Free fillet flap leg	DOD 27 months
12	F/42	Radiation-induced sarcoma right supraclavicular region	Necrosis, pain	Wide local excision	Free ALT flap	DOD 13 months
13	F/42	Fungating recurrent pelvic tumour after previous hemi-pelvectomy Low grade giant cell rich MFH	Necrosis, pain, small	Pelvic exenteration	Pedicled ALT flap reconstruction	DOD 2 months
14	M/19	Malignant peripheral nerve sheath tumour left axilla	Pain	Forequarter amputation	Filletted upper arm flap	DOD 8 months
15	F/55	Carcinosarcoma of chest wall	Pain	Forequarter amputation	Filletted upper arm flap	NED 13 months

TRAM, Transverse rectus abdominis flap; LD, Latissimus dorsi; ALT, Antero-lateral thigh; NDD, Negative pressure dressing; NED, No evidence of disease; DOD, Died of disease

experienced several episodes of torrential bleeding from the ulcerated tumour that required hospitalization for blood transfusion. She finally accepted extended hemipelvectomy as palliation of her symptoms. A large surgical defect was left after local skin mobilization. The lower leg was disease-free [Figure 2b] and it was possible to raise a composite soft tissue flap based on the popliteal vessels. This gave both closure and padding [Figure 2c] and no donor site morbidity [Figure 2d]. The patient was able to adapt her wheel chair, walk independently with a frame for a short distance and survived for 27 months before dying from progression of distant metastases. She expressed no regret at her surgery and counselled other patients who were contemplating similar procedures [Figure 2e]. Of note she no longer required narcotic analgesics after her surgery.

Case 15

A 55-year-old lady presented with a fungating central chest

mass [Figure 3a]. Pre-operative imaging indicated that this involved the sternum and there were enlarged nodes in the right axilla. The chest lesion was excised together with the lower end of the sternum and the defect closed with a local flap [Figure 3b]. A right axillary dissection was performed. Three months later, she developed left axillary nodes and a radical left axillary dissection was performed. Five months later, she developed a left supraclavicular mass associated with pain and lymphoedema of the left upper limb. A CT showed a large mass compressing the left axillary artery, involving the brachial plexus and encroaching on the chest wall [Figure 3c]. After a multidisciplinary review and discussion with the relatives the patient elected for a total local excision of the disease that required a forequarter amputation. She made an uneventful recovery and remains disease free and asymptomatic 1 year later [Figure 3d]. Of note she had stopped all pain medications when last reviewed.

RESULTS

All of the patients survived their operative procedure. A frequent finding was a network of collateral draining veins and the first surgical objective was to gain proximal vascular control of the major feeding artery. Resection then proceeded according to the preoperative imaging and intraoperative findings. The surgical objective was to clear all macroscopic tumour including involved ribs and other bones where applicable. Reconstruction of defects involved gortex mesh for chest wall defects, local filet flaps, or free filet flaps. In all cases of death, this followed distant disease with no further involvement of the girdle

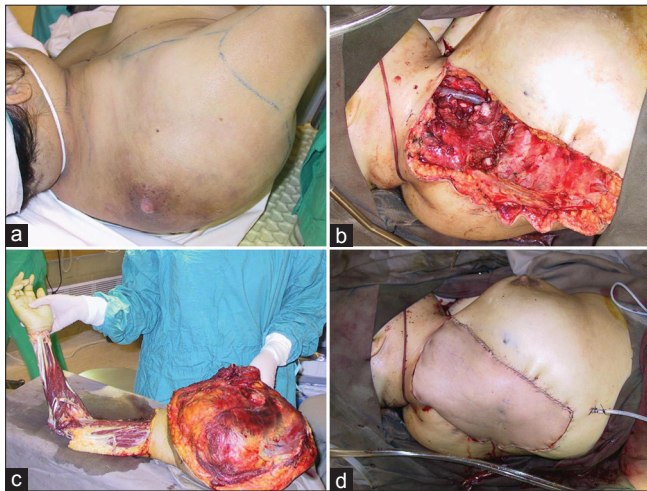


Figure 1: (a) Fibrosarcoma of right shoulder, (b) surgical defect, (c) forearm flap raised from amputated limb, and (d) compromised reperfusion of flap despite anastomotic patency

area. Three patients with malignant fibrous histiocytoma are still alive with no evidence of recurrent disease. In cases 1, 5 and 13, narcotic analgesia was continued postoperatively at a level that maintained lucidity but controlled the pain. In all other cases, narcotic analgesics were not used after the immediate postoperative phase and these patients all reported relief of pain.

DISCUSSION

All of the patients in this series had advanced and

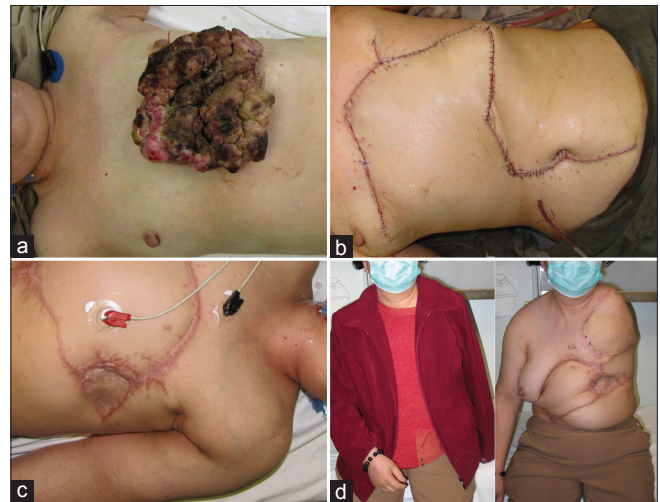


Figure 3: (a) A fungating tumour with a terrible smell, (b) excision and closure with local flap, (c) the lesion enveloped the subclavian vessels and the brachial plexus. This was an aggressive cancer, (d) the patient is shown in the outpatient clinic 6 weeks postamputation. She remains disease free one year later



Figure 2: (a) Epitheloid sarcoma of pelvis, (b) flap raised from lower leg, (c) flap inset, (d) no donor site morbidity, and (e) what better assessment of outcome could there be? A smiling face is worth more than all objective scoring schemes

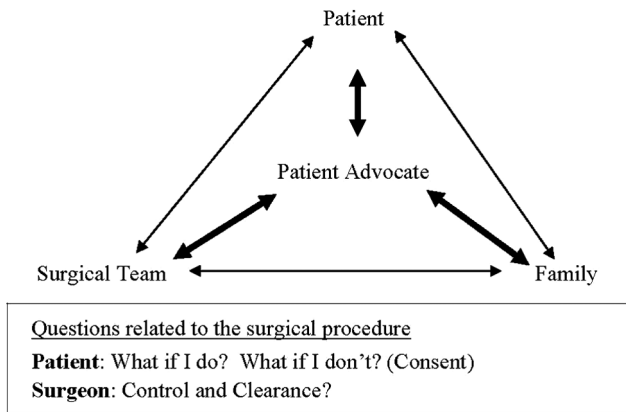


Figure 4: A patient advocate, ideally a senior and experienced nurse with a knowledge and understand of palliative, care can focus on the patient and family issues that extend beyond the surgical procedure. The major question for the family and patients relates to the two 'what if?' questions. For the surgeons the questions that need to be answered are different and relate to the risk-benefit equation. The risk is reduced by achieving vascular control of the operation site and the benefit is maximized by complete local tumour removal

aggressive malignant disease. All had received multimodal therapy and all were receiving symptomatic treatment. Nevertheless despite the best therapeutic endeavours of the caregivers the patients were suffering and their quality of life was poor. Indeed the patient and relatives perception of the quality of life was such that when presented with the option of very major surgery with the possibility of per-operative death being an outcome, the patients and the relatives considered the risk worthwhile.

Palliative surgery is both technically and ethically very challenging. The motivation of the surgical team is most often a feeling of humanity and compassion for the patients and relatives. There is no room for mistake, and it is essential that a truthful and realistic appraisal of the potential benefits of any surgical procedure is clearly outlined.

In the cases that had major resection and reconstruction, two groups emerged. In all cases, the surgical intent had been palliative but in three cases of malignant fibrous histiocytoma survival has been prolonged with no further evidence of disease. Of those who have died from disease Cases 1, 5 and 13 remained in hospital. Case 1 died of cerebral metastases, Case 5 of metastatic lung involvement and Case 12 developed uraemic coma. Palliative surgery is aimed at the quality of life rather than the quantity of life, and the successful outcome of such surgery is that the patient expresses gratitude that it has been performed. Objective outcome parameters are not

so easy to define and this is why such surgery can be difficult to justify in objective terms. However, there are a small number of reported series that do describe patients in whom there has been a significant improvement in the quality of life, albeit for a limited period, and the patients do appreciate this.^[9,10]

We do question the triangular relationship of decision makers as described by Milner *et al.*^[4] In this, they describe an equal interaction between the patient, the relatives and the surgeon(s) in the decision-making process. This can be difficult when the surgeons contemplating a major palliative procedure have been part of the team involved at an earlier stage of the disease; with diagnosis, attempts at cure and now progressive disease beyond cure. It is in this context that we propose another palliative care model [Figure 4]. This model relies on the involvement of a trained professional, often a nurse, who can act as an advocate for the patients and/or relatives but also a filter for the emotional input of the surgical team. The question that so often arises in advanced malignant disease where surgery is contemplated relates not to 'What if we do?' but to 'What if we don't?'. Whilst there are many very effective dressings to reduce smell, effective analgesics to reduce pain, the realistic possibility of removing both symptoms for a period of months in a dying patient at the price of the loss of a limb does need mature thought and honest clinical wisdom. The danger of being too brave, too bold, as a surgeon is the prospect of achieving 'surgical futility'. A further concern is the amount of time that can be dedicated to counselling the patient and relative when holistic palliation is the goal.^[11] Ideally the patient advocate, although experienced in palliative care, would have no training in any specific interventional modality and would thus exhibit no bias when discussing the risks, benefits, and expectations of surgery *versus* no surgery. This has to be the ultimate protection from 'conflict of interest' issues which otherwise could well operate in a process where the person proposing the intervention is going to perform the intervention. By using a trained intermediary, the process of communication can be significantly enhanced to the overall benefit of the clinical interaction. Whilst the 'informed consent' still has to be obtained and co-signed by the surgeon, the process of compartmentalization on which successful surgery is predicated in such complex and potentially emotional cases can be better achieved without diminishing the underlying humanity and compassion of the surgical motivation. Indeed the increasing role of the oncology nurses to take up patient advocacy is the focus of a recent paper from the USA.^[12]

In this series of patients only case 5 comes into the category of what we could regard as 'surgical futility'. This is assessed on the outcome of the surgery and in retrospect a rather different outcome could have been achieved if the effects of prolonged ischaemia had been appreciated. This technical point has been discussed by Tran *et al.* in their paper on the file flap.^[13] As such the local tumour was successfully excised, but the closure of the defect was compromised by a no-reflow phenomenon in the flap harvested from the amputated limb. This could have been avoided by an early above elbow amputation once it was appreciated that the vascular control of the major vessels was possible. The flap could then have been harvested and banked on another part of the patient, or cooled to reduce ischaemic damage. Perhaps what compounded the initial flap failure in terms of surgical futility was the harvesting of an abdominal flap which will have an effect on respiratory function. In a patient already compromised with lung secondaries this could have been avoided by using, for example, an extended antero-lateral thigh flap from either leg.

Palliative surgery is extremely challenging and requires the highest of surgical standards as the separation between palliation and futility can, at times, be very narrow. The goal is to enhance the quality of life during the process of dying. The absolute failure of palliation is to prolong the agony of death, and this has to be avoided at all cost.

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