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FROM SURGICAL TO CONSERVATIVE- HAS THE COVID PANDEMIC REVERSED OUR STANDOFF TO ORTHOPAEDICS

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INTRODUCTION

COVID- 19 pandemic has brought the need to revisit the conservative management of orthopaedic injuries back into sharp focus. Over the years as trauma and orthopaedics have evolved, operatives techniques have been developed, along with refinement of implants and instruments with an aim of transforming contemporary treatment of fractures to provide anatomical or near anatomical alignment of the fractures, stable fixation, with early pain free range of motion and rehabilitation. [1]. The current Coronavirus outbreak has refocussed orthopaedic minds on managing many injuries conservatively, which would have otherwise been managed with operative fixations. It is mainly because of the restraints put on by this viral infection, limited availability of resources including personnel and operating theatre slots (whilst they were redirected to manage urgent clinical priorities including respiratory emergencies due to COVID- 19 infections on the frontline) and due to reluctance of undertaking operative intervention in an atmosphere of increased risk of viral transmission, responsibility of protecting staff and 'social distancing' guidelines [2]. Traditional conservative treatment of fractures is based on three basic principles of fracture management; namely, reduction of fracture, holding the fracture reduced and keeping it reduced in a supported environment (such as a cast or splint) till the fracture heals. "Closed treatment of fractures" was very elaborately and scientifically described by Sir John Charnley is his monograph in 1950.[3]. The current pandemic situation has exposed us to the situation faced by Sir Robert Jones in the midst of chaos of World War- I, with limitations posed by the shortage of resources both personnel and equipment but the need to manage orthopaedic injuries in a safe manner whilst protecting patients including staff. Surgical specialties face unique challenges caused by COVID- 19[4]. For many urgent surgical procedures, additional steps are required to protect both patients and healthcare workers from the virus. 5–7Articular and peri- articular fractures may provide a challenge, since principles of fracture fixation (anatomical reduction, rigid fixation, early range of joint motion) and avoidance of posttraumatic arthritis are not possible with conservative management in most of these injuries and hence operative measurements would be required at a later date.

Table 1: Suggested Indications and Contraindications for conservative management of Paediatric fractures and dislocations, during COVID-19 Pandemic.

Limb injuries in Children Preferred indications and Adolescents		Equivocal indications	Contraindications
Upper Limb trauma	Clavicle fractures	Displaced fractures e.g., Supracondylar humerus, lateral condyle humerus, neck radius, distal radius and fractures radius and ulna.	Un reduced dislocations
	Proximal humerus fractures	Fracture-dislocations	Compartment syndrome
	Shaft humerus fractures with angulation of less than 45	Dislocations	Fractures with vascular deficits
	Supracondylar fractures (Undisplaced/ minimally displaced)		Compound fractures
	Extra articular distal radius fracture		Crush injuries
	Hand fractures		
	Reducible dislocations		
Lower Limb trauma	Shaft femur fractures with acceptable angulation and displacements	Fracture-dislocations	Un reduced dislocations
	Fractures around the knee	Dislocations	Compartment syndrome

	Shaft tibial fractures	Displaced fractures e.g. neck of femur, shaft femur, fractures around the ankle	Fractures with neurovascular deficits
	Metatarsal and phalanx fractures		Compound fractures
	Calcaneus fractures		Crush injuries
	Reducible dislocations		Compound fractures
Pelvic-Acetabular trauma	Stable/minimally displaced fractures	Open book type of injuries	
		Unstable fractures	

Table 2: Suggested Indications and Contraindications for Conservative Management of fractures and dislocations in adults, during COVID-19 pandemic.

Limb and Spinal injuries in Adults	Preferred Indications	Equivocal Indications	Contraindications
Upper Limb	Clavicle fractures	Fractures with significant displacement e.g., proximal humerus, humeral shaft, intercondylar humerus, olecranon	Severe compound fractures
	AC joint dislocations	Radius and ulna shaft fractures	Severe crush injuries
	Scapula fractures	Intra articular distal radius fractures	Fractures with vascular
	Fractures without gross displacements e.g. proximal humerus, humeral shaft, Humeral supra-condylar	Periprosthetic fractures	injuries
	Extra articular distal radius fractures	Pathological fractures	Compartment syndrome
	Scaphoid fractures		Grossly comminuted and
	Metacarpal fractures		displaced intra articular
	Phalanx fractures		fractures
	Reducible dislocations		Irreducible dislocations
Spine	Stable fractures	Unstable spine fractures with neural deficit	Stable spine fractures
			Fractures with Progressive/ acute neurologic deficit
Lower limb	Pubic rami fracturesLower limb	Pelvic-acetabular fractures with significant displacement	Fracture neck of femur
	Undisplaced pelvic-acetabular fractures	Inter trochanteric fractures	Femur shaft fractures
	Undisplaced fractures around knee	Intercondylar fractures	Severe compound fractures
	Calcaneus fractures without gross displacement	Tibial shaft fractures	Severe crush injuries
	Metatarsal fractures	Tibial condyle fractures	Fractures with vascular injuries
	Phalanx fractures	Patella fracture	Compartment syndrome
		Taller fractures	Grossly comminuted and displaced intra articular fractures
		Calcaneus fractures with gross displacement	Irreducible dislocations
		Lis franc injuries	
		Peri prosthetic fractures	
		Pathological fractures	

Table 1 and 2: It is obvious from this table that a majority of paediatric injuries can be adequately managed with conservative treatment.

Operative management is needed in articular and periarticular fractures most in the adult fractures.

However, there are certain absolute indication for the surgery of fractures and dislocation, even in the pandemic times (Table 2), which are also the contraindications for conservative management. The aim should be to minimise risk of viral transmission by avoiding Aerosol Generating Procedures (AGP) and minimising risk of infection with appropriate use of Personal Protective Equipment (PPE). These principles are critically engrained in our current orthopaedic response to the pandemic.

CONTRARY TO THE SITUATION AND EVIDENCE

Within orthopaedics, previous research has demonstrated that postponing major elective surgery, such as total joint arthroplasty or surgical non- union management, causes a considerable decrease in a patients' quality of life [8- 11] A significant deterioration of patient quality of life may occur over

the course of their pre- operative waiting period.[10,11] Globally, a vast number of patients are at risk of suffering major quality of life deterioration as a result of their elective surgery being postponed or cancelled.

the current guidance on elective surgery during the COVID-19 pandemic, assess how this guidance may impact orthopaedic care, to identify current elective surgery guidance globally as a result of the COVID- 19 pandemic within MEDLINE, EMBASE, Global Health and Emcare from the databases from inception until 6 April 2020.[12]

Elective surgery guidance

There were seven (63.6%) guidance reports that suggested a complete postponement of non- elective surgical procedures, whereas four (36.4%) reports suggested the use of selective postponement of these procedures.

Throughout the month of March, elective surgery guidance became increasingly strong in its suggestions for completely postponing all elective surgery.

Figure 1 provides an overview of the cumulative number of guidance documents within these categories over time.

The guidance for postponement of elective surgeries typically suggested that procedures should be rescheduled to a time after the COVID- 19 pandemic is over; however, it is unclear as to when this will be.

Guidance from the British National Health Service (NHS) has suggested elective surgery will postponed until at least mid- July, as guidance suggested a 3 monthpostponement starting 15 April.[13,14]

Stronger recommendations against elective surgery throughout the month of Marchis highlighted by two guidance reports provided by the American College of Surgeons on 13 and 24 March 2020.

Guidance on 13 March 2020 suggested to “reschedule elective surgeries as necessary”2 weeks later, guidance from the same organization strengthened their guidance to provide athree- phase plan, which ends in “phase III: to eliminate all elective practice”.

This trend was seen across guidance groups. Table 3 provides a brief summary of each report’s guidance on elective surgery in light of the COVID- 19 pandemic.

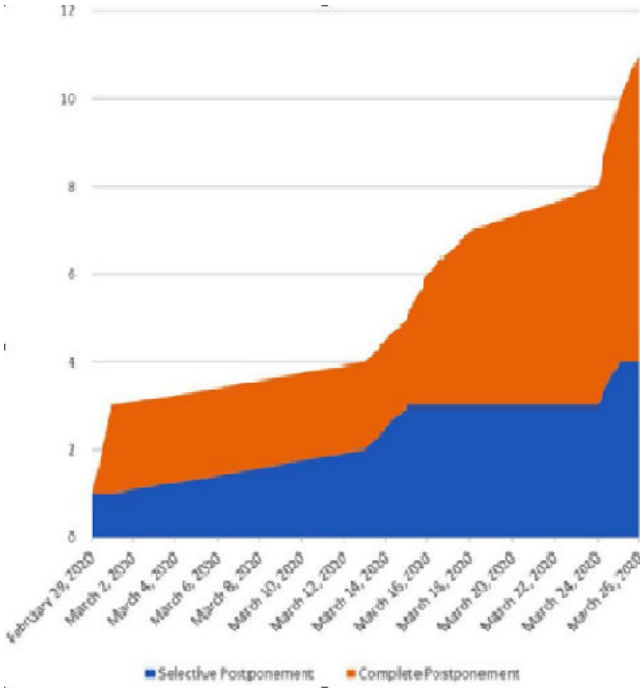

Fig 1: Guidance documents for elective surgery postponement. Data presented as cumulative number of reports.

Organization	Country	Date published	Details regarding elective surgery	Details regarding non operative management
CDC	US	29-Feb-20	Reschedule elective surgeries as necessary. Shift elective urgent inpasione diagnostic and surgical procedures to seining’s, when Reasible.	None
Tao et al. [Overview of National Health Commission of the People's Republic of China	China	01-Mar-20	For pasions undergoing elective surgery it is recommended not 10 perform surgical for the time being, and they can be elecive alter the opidemic is under conical.	None
Royal Australasian College DF Surgeons	Australia	01-Mar-20	Series Di from elective specialey associations : Non-urgent and elective	Non operative treatment naments will conler advantage over

			surgeries to be suspended immediately.	operative naments If similar cuicomes, or aven slightly downgraded outcomes are expensed.
American College of Surgeons	US	13-Mar-20	Reschedule elective surgeries as necessary. Shift elective urganit inpasione diagnostic and surgical procedures 10 curpasione seining's, when Reasible. List by subspecialty declaring which surgeries should be schedule or reschedule depending the phase of COVID-19 pandemic. Phase II (curial elective practice), phase II (eliminaes elective practice). Full lisa by subspecialis t in document.	None
		24-Mar-20		Consider non operative managemen t whenever it is dinically appropriate for the patient.
Caners for Medicare and Medicaid Services	US	15-Mar-20	CMS urges healthcare facilities and cinicians 10 consider using a siered appreach 10 cursaling non-emergent, elective medical services and treatement.	None
NHS	UK	16-Mar-20	The elective component of trauma and or	A number of injuries can be managed eiher
			rehopaedic work may be curialled. Elective resources should be repurposed 10 suppon influx of COVID cases.	operatively or nori-aperasively. Clinical decisions during a serious incident must sako into accounts the available laciliey for the impact this may have on the whole community.
		18-Mar-20	NHS hospitals in England have been told 60 suspend all non-urgent elective surgery for at lease 3months from 15 April 2020	None
British Onhopaedic Association	UK	24-Mar-20	Pationis should have consuliant-delivered, delinitive locision-making at Brst amendance and, in panicular, should not be scheduled for surgery without senior input.	Aim for non-operative managemen t for the majoriey of injuries where this is possible and sale.
WHO	International	25-Mar-20	Many routine and elecive services may be posipaned or suspended. Establishing effective passion How (including screening eriage, and targeted referral Di COVID-19 and cases) is essential at all levels.	None
Royal College of Surgeons	UK	26-Mar-20	Acuso/ omergancy pationis are priority. Only emergency endoscopic procedures should be performed.	Where non-operaive managemen t is possible and reasonable Isuch as for early appendicitis

				and acute cholecysanis) this should be implemented.

Table 3: Elective surgery guidance from health organization.

DISCUSSION

Based on the guidance documents included in this review, it is apparent that elective surgical practices are being postponed globally. Transitions from selective rescheduling to complete rescheduling of all elective patients has been occurring throughout the month of March. Major guidance groups such as the Centers for Disease Control and Prevention

(CDC), NHS, and WHO, have provided guidance on elective surgery, which has been disseminated by smaller organizations and local governments.[15]. The Royal Australasian College of Medicine suggested that "Non operative treatments will confer advantage over operative treatments if similar outcomes, or even slightly downgraded outcomes are expected", as even slightly worse outcomes than what would be expected with surgery may still be a better option than providing no treatment at all.[16].

CONCLUSION

Global guidance from major medical associations are in agreement that elective surgical procedures require postponement in order to minimize the risk of COVID- 19 spread, as well as increase available hospital resources for managing the influx of COVID- 19 patients. For patients that have their elective surgery postponed, there is no clarity as to how long it will be before their elective surgeries will be rescheduled. It is imperative that clinicians and patients consider non- operative, conservative treatment options in order to manage conditions and symptoms until surgical management options become available again, and to manage the increased surgical waitlists caused by the elective surgery shutdowns.

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