

Management of anaesthesia for elective, low-risk (Category 4) caesarean section

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ABSTRACT

An increasing number of caesarean sections are being performed for both elective as well as emergency cases. Category 4 caesarean section refers to a planned elective surgery after 39 weeks of gestation at a time suitable to the mother and the maternity team. For a safe conduct of anaesthesia, the updated obstetric anaesthesia guidelines recommend administration of neuraxial anaesthesia, whenever feasible. The management should include adequate postoperative pain relief, early ambulation, and thromboprophylaxis to ensure early recovery. This review will discuss the anaesthetic management including regional anaesthesia, general anaesthesia, and postoperative analgesia for elective, low-risk (Category 4) caesarean section.

Key words: Analgesia post-caesarean delivery, low risk, Category 4 caesarean section, neuraxial anaesthesia for caesarean delivery, rapid sequence induction

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INTRODUCTION

Caesarean delivery (CD) is one of the most commonly performed surgical procedures in the obstetric population in developing countries. CD is conducted to improve maternal or foetal outcome, or to reduce anticipated complications from spontaneous labour and vaginal delivery. Based on the World Health Organization (WHO) systematic review, increases in CD rates up to 10–15% at the population level are associated with decreases in maternal, neonatal, and infant mortality. Above this level, increasing the rate of CD is no longer associated with reduced mortality.^[1] Analysis of district level household survey-4 (DLHS-4, 2011–12) of India showed that although a higher proportion of women deliver at the public sector, CD births are more in private sector health care facilities.^[2]

The traditional classification of CD categorised planned CD as an “elective” and all others as emergencies. This system did not adequately address the categorisation of non-elective cases, and hence, all were classed as emergencies. Lucas *et al.* proposed a new classification that considered the degree of urgency based on maternal or foetal compromise [Table 1].^[3] In 2001, Robson introduced

a system of 10 groups that classify all women admitted for delivery (and not indications) according to 5 obstetric characteristics that are routinely collected [Table 2].^[4] Systematic reviews conducted at the WHO identified this classification as the most appropriate system to fulfill current international and local needs.^[5] The WHO Statement proposes the use of the Robson classification as the global standard for assessing, monitoring, and comparing CD rates within health-care facilities over time, and between facilities.^[1] The Royal College of Obstetricians and Gynaecologists introduced a modified version of the classification proposed by Lucas *et al.* The color scale incorporated in this classification reinforces the need to recognise that a “continuum of urgency” applies to CD, rather than discrete categories. Category 1 CS is performed where there is immediate threat to the life of the woman or foetus, Category 2, when there is

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maternal or foetal compromise which is not immediately life-threatening, Category 3, when there is no maternal or foetal compromise but needs early delivery, and Category 4 is delivery timed to suit woman or staff.^[6] Elective CS is usually planned after 39 weeks of pregnancy to reduce the incidence of transient tachypnoea of the newborn and scheduled at a time suitable to mother and maternity unit [Table 3]. This review will discuss anaesthetic management, including regional anaesthesia, general anaesthesia, and postoperative analgesia for elective, low-risk (Category 4) CD.

PREANAESTHETIC EVALUATION

Preoperative information before scheduled surgery

A preoperative visit establishes trust and confidence in the prospective mother. Most pregnant women are

Table 1: Lucas classification based on the urgency of caesarean section

Grade/Category	Definition
Emergency	Immediate threat to life of woman or foetus
Urgent	Maternal or foetal compromise which is not immediately life-threatening
Scheduled	Needing early delivery but no maternal or foetal compromise
Elective	At a time to suit the woman and maternity team

Table 2: Ten group classification system by Robson

Group	Descriptions
1	Nulliparous, single cephalic, ≥ 37 weeks, in spontaneous labor
2	Nulliparous, single cephalic, ≥ 37 weeks, induced or CS before labor
3	Multiparous (excluding previous CS), single cephalic, ≥ 37 weeks, in spontaneous labor
4	Multiparous (excluding previous CS), single cephalic, ≥ 37 weeks, induced or CS before labor
5	Previous CS, single cephalic, ≥ 37 weeks
6	All nulliparous breeches
7	All multiparous breeches (including previous CS)
8	All multiple pregnancies (including previous CS)
9	All abnormal lies (including previous CS)
10	All single cephalic, ≤ 36 weeks (including previous CS)

CS – Caesarean section

Table 3: Indications of low-risk (Category 4) caesarean section

Breech presentation (at term) who are not candidates for vaginal delivery
Other malpresentations - e.g., unstable lie (a presentation that fluctuates from oblique, cephalic, transverse, etc.), transverse lie, or oblique lie
Twin pregnancy - when the first twin is not a cephalic presentation
Transmissible disease (e.g., poorly controlled acquired immunodeficiency syndrome)
Maternal diabetes with a baby's estimated birth-weight > 4.5 kg
Maternal request

young and healthy; however, the physiological changes of pregnancy make these women prone to rapid and sudden deterioration. According to American Society of Anesthesiologists (ASA), pregnancy is classified as ASA Physical Status II.^[7]

A detailed maternal history and examination are vital before proceeding for any anaesthetic procedure. Preanaesthetic evaluation should look for any significant obstetric or anaesthetic risk factors, requiring a prior consultation between the attending obstetrician and anaesthesiologist. The multidisciplinary team should communicate closely and formulate plans according to risk stratification if any. Any new onset breathlessness should be evaluated thoroughly as cardiac lesions, especially mitral stenosis presents for the first time during the third trimester of pregnancy. History of allergies, medications, past anaesthetic exposure, recent food, and liquid intake along with a careful check of blood pressure records should be made and documented. Since most of the elective CDs (Category 4) are performed under the neuraxial block, the back should be examined. A list of comorbidities like spinal deformities, obesity, and coagulation abnormalities should be noted. Any contraindications to spinal anaesthesia (SA) should be identified, and the patient should be evaluated thoroughly for an alternative plan of management.^[8,9]

Airway assessment during preoperative evaluation is vital as the course of pregnancy is associated with changes in Mallampati classification.^[9] The high incidence of difficult airway among parturients could be due to changes in soft tissues of the airway mucosa, swollen and engorged breasts along with full dentition.^[10] Therefore, it is imperative to try and identify beforehand an airway that is likely to prove difficult, especially when associated with the following:^[11]

1. Mallampati class III and IV
2. Receding mandible
3. Protruding maxillary incisors
4. A short neck
5. A neck circumference of ≥ 40 cm.

Institutional difficult airway algorithm should be available. The protocol should be laid down specific to the available resources in that area. The information will be helpful in streamlining the plan of action should an unforeseen emergency occur.

Routine investigations such as haemogram, blood sugar, and urine examination are generally sufficient in healthy

women. The routine ordering of platelet count is not a prerequisite for placement of neuraxial block. The ASA Practice Guidelines for Obstetric Anesthesia state that anaesthesiologists should “order or require a platelet count based on a patient’s history, physical examination, and clinical signs; a routine intrapartum platelet count is not necessary in the healthy parturient.”^[9]

Regarding blood and blood products in healthy pregnant women, the task force has suggested that “the decision whether to order or require a blood type and screen or cross-match should be based on maternal history, anticipated hemorrhagic complications (e.g., placenta accreta in a patient with placenta praevia and previous uterine surgery), and local institutional policies.”^[9]

An informed written consent for anaesthesia and surgery should be obtained during this visit.

PREOPERATIVE PREPARATION

- i. Fasting: Prior to elective Category 4 CS, women are expected to fast 6–8 h for solids depending upon the type of food consumed. Moderate amount of clear liquids such as water, fruit juices without pulp, and tea without milk up may be consumed up to 2 h before induction of anaesthesia in healthy women with no complications^[9]
- ii. Prophylaxis of aspiration of gastric contents: The practice guidelines advocate timely administration of non-particulate antacids, H₂-receptor antagonists, and/or metoclopramide for aspiration prophylaxis.^[9] Sodium citrate 30 ml of 0.3 M solution, if available can be used orally, or premedication with a prokinetic like intravenous metoclopramide 10 mg and an H₂-receptor antagonist like ranitidine 50 mg IV should be given 30–60 min before surgery^[8]
- iii. A large bore intravenous cannula (18 G/16 G) is generally preferred for CD
- iv. Transport to operation theater: A pregnant woman should be transferred to the operating theater while maintaining left lateral uterine displacement to prevent maternal hypotension due to aortocaval compression
- v. Antibiotic prophylaxis: American College of Obstetricians and Gynecologists guidelines recommend that appropriate antibiotic prophylaxis be administered before skin incision for CD^[12]

- vi. WHO has mandated the use of surgical safety checklist for operative procedures in all hospitals.^[13]

MONITORING

Pulse oximetry is highly recommended along with electrocardiography in this patient population. Blood pressure monitoring is mandatory, preferably using an automated noninvasive device and should be measured every 1–2 min until the delivery of the baby. Capnography is recommended for general anaesthesia during CD to confirm tracheal intubation and maintain normocarbia before delivery. Monitoring devices, such as an oxygen analyser with an audible alarm, carbon dioxide analyser, and a vapour analyser, whenever a volatile anaesthetic is delivered, have also been recommended.

MODES OF ANAESTHESIA

Neuraxial anaesthesia

Antiseptic technique before regional anaesthesia: Both ASA^[14] and American Society of Regional Anesthesia (ASRA)^[15] have published guidelines that outline steps to minimise the risk of infection associated with neuraxial anaesthesia. Both recommend using chlorhexidine–alcohol solutions for sterile preparation of the skin rather than povidone–iodine with alcohol or povidone–iodine alone. ASRA guidelines state that “Alcohol-based chlorhexidine antiseptic solutions significantly reduce the likelihood of catheter and site colonization and maximize the rapidity and potency of bactericidal activity when compared to other solutions (Grade A).” Recommendations for aseptic techniques during regional anaesthesia (e.g., cap, sterile gown, sterile gloves, etc.) should be endorsed during neuraxial anaesthesia for CS.

Spinal anaesthesia

Single shot SA is preferred for elective CD, due to its simplicity, ability to provide adequate surgical anaesthesia, ease of administration, faster onset of action, and safety. SA also allows higher maternal satisfaction due to early skin-to-skin contact. The technique of SA is described in Table 4.^[16] Using combined spinal epidural (CSE) technique doses can be lowered to 5–7.5 mg bupivacaine with or without adjuvants. The block height may then be augmented using aliquots of bupivacaine boluses epidurally.

Table 4: Spinal anaesthesia technique for caesarean delivery

Parameters	Details
Patient positioning	Sitting -Identification of the midline easier -CSF pressure higher and therefore flow faster Lateral -Might be uncomfortable for patient -Time to onset of block may be quicker than sitting or Oxford position. Oxford position -Procedure is done with patient in left lateral with slight head down tilt with her head and shoulders supported to produce an upward curve in the thoracic spine to minimise spread to higher thoracic levels. Following spinal injection the woman is turned to the exact same position on the right side and remains in that position until block is adequate for surgery. -Less aorto-caval compression
Approach	Midline, paramedian Can be done under ultrasonography guidance
Needle (25/26/27G)	Pencil Point (e.g. Whitacre, Sprotte) Less incidence of PDPH Cutting (e.g. Quincke)
Drugs	Local anaesthetics -Hyperbaric bupivacaine (0.5%) -9 to 12 mg -Intrathecal Lidocaine -decline in usage due to neurological complications With additives (opioid- fentanyl 10-15 µg/non-opioids) For achieving dose reduction of local anaesthetics
Dosages	The higher intra-abdominal pressures transmitted via the inferior vena cava to the epidural veins which compress the spinal space and produce a higher block level for the same volume of local anaesthetic injected into the intrathecal space
Level of block required	Loss of touch T5 and loss of cold T4 plus bilateral lower limb motor block

CSF - Cerebrospinal fluid; PDPH - Post dural puncture headache

SA-induced hypotension

Hypotension is more common post-SA than Epidural Anaesthesia (EA). The concept of hypotension in obstetric SA has changed based on information from the “natural experiment” of preeclampsia and fresh information from vascular biology, and has led to a change in the management of hypotension in these circumstances. The use of sympathomimetic vasopressors to sustain arteriolar tone and thus arterial pressure has become the most important strategy for safe SA in contemporary practice.^[17] Details of management for postspinal hypotension are tabulated [Table 5].^[8,9,18-21]

Epidural anaesthesia

EA causes a delayed onset of the block than SA and the spread of block could be uneven, often resulting in

Table 5: Management of hypotension associated with spinal anaesthesia

Interventions	Comments
Patient positioning	Positioning at the time the regional technique is performed can influence the speed of onset of sensory block and incidence of hypotension During surgery the patient should be positioned with a 15° left lateral tilt to reduce aortocaval compression and hypotension from a reduction in preload
Intravascular loading	“Co-loading” means starting a fluid infusion rapidly as soon as the local anaesthetic is injected into the intrathecal space. “Preloading” means infusion of fluids prior to SA A rapid crystalloid co-load of 20 ml/kg is recommended as the initial fluid intervention rather than preload
Vasopressors	Alpha-adrenergic agonist, e.g., phenylephrine (50-100 µg) helps to prevent/treat spinal induced hypotension and results in improved umbilical artery pH. Ephedrine appears to contribute to foetal acidosis by crossing the placenta and increasing foetal metabolic activity. Either of the vasopressors should be titrated to maintain maternal blood pressure near to baseline level Dual vasopressors: Combinations of these agents have failed to demonstrate benefit over phenylephrine alone when given by prophylactic infusion to prevent hypotension during SA for CD
Compression stockings	Prevention of venous pooling
Atropine	For precipitous bradycardia and hypotension during spinal anaesthesia

SA – Spinal anaesthesia; CD – Caesarean delivery

sparing of the sacral roots. The duration of the block can be prolonged if an epidural catheter is inserted, and frequent top-ups with local anaesthetic (LA) agents alone or a combination of such agents and opioids are used.^[8,9] EA offers better cardiovascular stability than single shot SA. The agents used for EA for CD include bupivacaine or lidocaine with 1:200,000 epinephrine. Addition of fentanyl to the LA improves the quality of anaesthesia.^[8]

Combined Spinal - Epidural anaesthesia

Combined Spinal - Epidural (CSE) anaesthesia, especially in elective CS, provides exceptionally good anaesthesia as any patchy analgesia can be taken care of by extending the block with epidural LAs and adjuvants. Compared with EA, CSE provides faster onset of adequate pain relief from the time of injection and increases the incidence of maternal satisfaction.

All obstetric operation theaters should have a difficult airway cart.

General anaesthesia

Standard practice for parturients scheduled for CD under general anaesthesia is rapid sequence induction.

Preoxygenation

As functional residual capacity reduces by up to 40% and oxygen consumption increases by 20%, oxygen reserves are rapidly depleted in a pregnant woman. This warrants preoxygenation with 100% oxygen via a tight-fitting mask. Preoxygenation can be achieved by tidal volume breathing for 3 min or by performing eight vital capacity breaths.^[22] Difficult mask ventilation (DMV) is anticipated in obese women, preeclamptic oedematous women, and those with short neck.^[23]

Intravenous anaesthetic agents

Propofol is now a preferred induction agent for general anaesthesia in CD in healthy, noncompromised patients. However, thiopentone (5 mg/kg lean body weight) and succinylcholine are still the anaesthesia induction agents of choice in developing countries due to ready availability.^[24]

Muscle relaxants

The combination of rocuronium and sugammadex provides safer neuromuscular blockade than succinylcholine.^[25]

Opioids

Remifentanyl is being recommended for use in preeclamptic patients to blunt haemodynamic responses before intubation. Robust data are yet awaited to make it a standard practice, particularly in elective scenario.

Inhalational agents

Anaesthesia is generally maintained with inhalational anaesthetic agents such as isoflurane and sevoflurane. Halothane is usually avoided because of its uterine-relaxant activity. Nitrous oxide is also used because of its rapid onset and intraoperative analgesia.^[8] End-tidal agent monitoring can be used to titrate the inhalational anaesthetic concentration, with the knowledge that minimum alveolar concentration (MAC) is decreased by up to 40% for parturients. FiO_2 should be guided by pulse oximetry. Concentrations of volatile anaesthetics higher than 1 MAC should be avoided throughout the entire anaesthesia for CD before the delivery of the baby due to the transplacental drug transfer and consequent foetal depression, and after the delivery of the baby due to the dose-dependent myometrial relaxing properties of volatile anaesthetics.^[26]

The endotracheal tube

The endotracheal tube of smaller size should be inserted keeping in mind mucosal oedema. Algorithms given by bodies such as ASA, Obstetric Anaesthetists'

Association (OAA), Society for Obstetric Anesthesia and Perinatology, etc., should be rehearsed. The OAA and Difficult Airway Society guidelines and the All-India Difficult Airway guidelines for the difficult obstetric airway comprehensively summarised difficult airway management in obstetrics.^[27,28]

Supraglottic airway devices

Supraglottic airway devices are rescue devices that can be used to maintain oxygenation in women with difficult airway, both DMV and/or difficult intubation. The LMA Proseal™ holds great potential in the management of the obstetric airway as it incorporates a gastric tube intended to permit continuity with the gastrointestinal tract and isolation from the airway, minimizing gastric insufflations during positive pressure ventilation. Other supraglottic airway devices, which can be used in similar scenarios, are LMA Classic™, LMA Supreme™, and I-gel™.^[29]

Cricoid pressure

The efficacy of cricoid pressure (CP) in preventing pulmonary aspiration is controversial, especially as its correct application is much more difficult than expected. The exerted force during CP should be 10 N before the administration of anaesthesia induction agents and should be increased to 30 N after the loss of consciousness.^[30]

OXYTOCIN USE

Oxytocin (IV or IM) is the recommended uterotonic drug for the prevention of postpartum haemorrhage PPH in caesarean section by WHO. The Guideline Development Group (GDG) of WHO noted that in terms of blood loss, there was not enough evidence to recommend oxytocin infusion over IV bolus injection. However, due to concerns regarding adverse haemodynamic effects, the GDG considered that if an IV bolus injection is used, a slow injection rate is preferred and a rapid injection rate should be avoided.^[31]

At low doses of oxytocin, the risk of adverse haemodynamic alterations and nausea are minimised. However, this should be associated with mandatory active observation of the clinical situation, to detect situations that require additional doses of oxytocin or other uterotonic agents.

POSTOPERATIVE ANALGESIA

Optimal pain relief is essential following CD as it allows early maternal mobility. A multimodal analgesia

regimen which takes into consideration both somatic and visceral “cramping” pain should be practiced. Since most of the CDs are performed under single shot SA without the addition of opioids in our country, relief of postoperative pain is for a limited duration. Pre-emptive analgesic use for pregnant patients is limited by fear of uteroplacental drug transfer. Also, concerns exist regarding the potential for transfer of analgesics to the breast-feeding neonate in postoperative period.^[32]

Analgesia after CS has been recently summarised.^[33] The following are different analgesia options which may be considered:

Neuraxial medications

The ASA's Obstetric Anesthesia Practice Guidelines and the American Pain Society's Clinical Practice Guidelines both recommend the routine use of neuraxial anaesthesia for CD.^[9,34] Routinely for intraoperative caesarean anaesthesia, a combination of LA and a lipophilic opioid (e.g., fentanyl) is used. Their analgesia is effective in the early postoperative recovery period until the onset of effect of longer acting neuraxial opioids; neuraxial morphine takes approximately 60–90 min for onset of action.

Epidural infusion of local anaesthetic-manual/continuous infusion/patient controlled mode of delivery

An epidural catheter *in situ* can be used for continuous and patient-controlled epidural analgesia infusions. The downsides are restricted maternal mobility, increased clinician workload, delayed anticoagulation prophylaxis, and cost-effectiveness.

Transversus abdominis plane block or quadratus lumborum block

Transversus abdominis plane (TAP) blocks are useful primarily for somatic incisional pain rather than visceral pain. In CDs conducted under general anaesthesia or SA without intrathecal or epidural morphine, TAP blocks have been significantly contributing to improve postoperative pain relief and reduce systemic opioid requirements.^[35] Single shot TAP block provides analgesia extending for 6–12 h. Data evaluating quadratus lumborum (QL) block following CD are limited. A study reported reduced opioid requirements and pain scores when QL block was performed after CD under SA.^[36]

Wound infiltration

Parturient who undergo general anaesthesia for CD may benefit from LA delivered via wound infiltration

or TAP block.^[37] However, in patients who receive SA and neuraxial opioids, the benefit of single-dose LA wound infiltration is minimal. Single-dose LA wound infiltration at the time of surgery is unlikely to last beyond the duration of the neuraxial block, affects only incisional (not visceral) pain, and has variable efficacy.

Oral or intravenous analgesics

Breast-milk transfer potential for commonly used analgesics (e.g., opioids and nonopioids) after CD should be considered. Opioid-sparing multimodal analgesia is generally offered post-CD, because opioids (e.g., morphine) are associated with breast-milk transfer and may cause neonatal sedation.

Non Steroidal Anti Inflammatory Drugs (NSAIDs), acetaminophen – These analgesics have opioid sparing property.^[38-40] Acetaminophen provides effective analgesia with negligible side effects; hence, it is extensively used in the postoperative period.^[38] The US Food and Drug Administration decreased the recommended maximum daily dose of acetaminophen to 3250 mg.^[39] NSAIDs are component of multimodal postoperative pain management. NSAIDs decrease visceral cramping pain. Acetaminophen coupled with NSAIDs should be used for post-CD analgesia unless contraindicated.^[40] Use of intravenous formulations of these analgesics should be limited to those with intolerance to oral intake or experiencing postoperative nausea or vomiting (PONV).

INTRAOPERATIVE/POSTOPERATIVE NAUSEA AND VOMITING

One should recognise the possible causes (e.g., restrictive fluid management) and reconsider the preventive options like prevention of hypotension and fluid administration. There are two further options: (1) prophylaxis of intraoperative nausea and vomiting/PONV occurrence using ondansetron, etc.; and (2) immediate and adequate treatment using antiemetics.^[41]

Future perspective

Enhanced Recovery Programme – The majority parturients undergoing CD are young and healthy and therefore have the potential for rapid recovery following CD. Furthermore, being able to care for their newborn motivates them to return to daily activity. The principles of enhanced recovery cover the entire perioperative care pathway – the preoperative, intraoperative, and postoperative phases

of care. As anaesthesiologists, we should ensure to use prophylactic antibiotics, thromboprophylaxis, maintaining euvoalaemia, prevention of hypotension, active warming for temperature management, adequate postoperative analgesia, and allowing early oral intake as part of Enhanced Recovery After Surgery (ERAS) bundle.^[42]

SUMMARY

Perioperative anaesthesia management for elective, low-risk (Category 4) CD includes through preoperative evaluation, aspiration prophylaxis, proper positioning of patient with left uterine displacement, preference to neuraxial anaesthesia (SA), and optimal postoperative analgesia. Implementation of ERAS programme is coming with a bang.

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Conflicts of interest

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Announcement

CALENDAR OF EVENTS OF ISA 2017-18

The cut off dates to receive applications / nominations for various Awards / competitions 2018 is as below. Please visit isaweb.in and log in with your ISA Regd. E Mail ID & Password and submit application with all documents as attachment. Mark a copy of the same by E Mail to secretaryisanhq@gmail.com. Write the name of Award applied as subject. Link will be sent to judges for evaluation. No need to send hard copy. Only ISA members are eligible to apply for any Awards / competitions. The details of Awards can be had from Hon. Secretary & also posted in www.isaweb.in

Cut Off Date	Name of Award / Competition	Application to be sent to
30 June 2018	Bhopal Award for Academic Excellence	Hon. Secretary, ISA (by log in & E Mail)
30 June 2018	Late Prof. Dr. A .P. Singhal Life Time Achievement Award	Hon. Secretary, ISA (by log in & E Mail)
30 June 2018	Rukmini Pandit Award	Hon. Secretary, ISA (by log in & E Mail)
30 June 2018	Dr. Y. G. Bhoj Raj Award	Hon. Secretary, ISA (by log in & E Mail)
30 June 2018	Mrs. Shashi & Dr. P Chandra Award	Hon. Secretary, ISA (by log in & E Mail)
30 Sept. 2018	Kop's Award	Chairperson, Scientific Committee ISACON 2018 copy to Hon. Secretary, ISA (by log in & E Mail)
30 Sept. 2018	ISACON Jaipur Award	Chairperson, Scientific Committee ISACON 2018 copy to Hon. Secretary, ISA (by log in & E Mail)
30 Sept. 2018	Prof. Dr. Venkata Rao Oration 2017	Hon. Secretary, ISA (by log in & E Mail)
30 Sept. 2018	Ish Narani Best poster Award	Hon. Secretary, ISA (by log in & E Mail)
30 Sept. 2018	ISA Goldcon Quiz	Chairperson, Scientific Committee ISACON 2018
10 Nov. 2018	Late Dr. T. N. Jha Memorial Award & Dr. K. P. Chansoriya Travel Grant	Hon. Secretary, ISA, (by log in & E Mail) copy to Chairperson Scientific Committee ISACON 2018
20 Oct. 2018	Bidding Application for ISACON 2020	Hon. Secretary, ISA by log in, E Mail & hard copy
20 Oct. 2018	Awards (01 Oct 2017 to 30 Sept 2018)	Hon. Secretary, ISA (by log in & E Mail)

(Report your monthly activity online every month after logging in using Branch Secretary's log in ID)

1. Best City Branch
2. Best Metro Branch
3. Best State Chapter
4. Public Awareness – Individual
5. Public Awareness – City / Metro
6. Public Awareness - State
7. Ether Day (WAD) 2018 City & State
8. Membership drive
9. Proficiency Awards

Send hard copy (only for ISACON 2020 bidding) to

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