

A study on the growth and productivity of Surgical Industries in Baruipur Sub-division of South 24 Parganas District, West Bengal: A historical perspective

DIPTA SUNDAR MONDAL

B.Ed. Teacher Trainee

University of Calcutta (Fakir Chand College)

Diamond Harbour (W.B.) India

ABSTRACT

The manufacturing of surgical instruments in India begun in the nineteenth century. The Second World War had a great impact on the surgical goods manufacturing in India. From then Baruipur Surgical Cluster Industries has been flourished as one of the successful small-scale industrial sectors in the 24 Parganas District of West Bengal, India. Baruipur emerged as the main supplier of surgical instruments in Eastern India. In 60's decade The State Government of West Bengal, the Department of Industries had set up a service centre by the name 'Surgical Instrument Service Station' at Piyali Town in Baruipur. Thus Surgical equipment makers from Baruipur spread their wings. But in the later decades the scenario has changed. Lack of advanced technology, government support and tough competition in the international market creates huge setback for the industry and the labours to survive. In this paper, an attempt will be made to make an empirical analysis on the nature, growth and productivity moreover the evolution of Baruipur's ancient art Surgical Cluster Industry and also trace the present scenario and government initiatives regarding Baruipur Surgical industries through field survey and personal interviews.

Key Words : Baruipur, Blacksmith, Cluster, Economic growth, Forging, Industries, Karmakars, Labour, Mistri, Surgical Instruments

INTRODUCTION

Eminent medical historian John Kirkup argues that fingers, nails and the mouth were the earliest surgical tools, used by prehistoric humans to remove foreign objects from wounds. Surgical instruments have evolved over millennia, as humans have discovered new materials for tool making.¹ India is now the limelight for its expertise in some segments of the medical devices sector. Owing to its high growth potential in terms of domestic manufacturing and global exports, the Medical Devices, Surgical Equipments and Pharmaceutical Machineries have emerged as the 'Sunrise Sector' of India. The manufacturing of surgical instruments in India begun in the nineteenth century. However, until the 1930s the domestic demand for surgical instruments was mainly met through imports from Britain, the United States and Germany. Sialkot in pre-partitioned Punjab was the only place in India where the surgical instruments industry flourished during the First World War.

How to cite this Article: Mondal, Dipta Sundar (2018). A study on the growth and productivity of Surgical Industries in Baruipur Sub-division of South 24 Parganas District, West Bengal: A historical perspective. *Internat. J. Appl. Soc. Sci.*, 5 (6) : 847-859.

Manufacturing of surgical instruments is one of the successful small-scale industrial (SSI) sectors in the 24 Parganas

District of West Bengal, India. It has an enormous export potential. Manufacturers are now supplying their products to big dealers and exporters of Delhi, Mumbai, Jalandhar and often directly to overseas clients. Manual forging in the local blacksmith or *karmakars* units is the first step in the production chain. Blacksmiths or *karmakars* forge the stainless steel components from rolled rounds, which are supplied by the instrument manufacturers. About 7,500 persons are directly or indirectly involved in forging of surgical products in Baruipur subdivision of 24 parganas district of west Bengal, India. Lately, however, some changes in this industry threaten their existence. In my article I traced the immense growth and productivity of surgical instruments in Baruipur sub-division and also put a light on blacksmith or *karmakars* struggle to keep this ancient art alive.

Objectives of the study :

- To analysis the nature, growth and productivity of Baruipur Surgical Industries of South 24 Parganas District, West Bengal, India from the second half of twentieth century to present.
- To trace down the present scenario of Baruipur Surgical Industries, conditions of the labours and government initiatives for the industries.

METHODOLOGY

For this research paper data were collected from both primary and secondary sources. Government reports, surveys, gazetteers are used as Primary source data while the Secondary source data are consulted from the published materials in the form of books, research journal papers, field surveys, personal interviews and the materials available in the internet. The details of the books, journals and other materials are given in the reference part.

Baruipur and the beginning of sugical instrument production :

Baruipur is a city and a municipality in South 24 Parganas district in the state of West Bengal, India. Baruipur is 25 km from Sealdah Station. Baruipur is located at 22.35°N 88.44°E. It has an average elevation of 9 meters (29 feet). As of 2001 India census, Baruipur had a population of 44,964. Males constitute 51% of the population and females 49%. Baruipur has an average literacy rate of 84%, higher than the national average of 59.5%; with 52% of the literates being male and 48% being female.²

The Second World War had a great impact on the surgical goods manufacturing in India First, during the War due to disruption in sea routes imports became difficult, creating immediate need for indigenous production. Second, the demand for surgical instruments picked up rapidly due to increased injuries and ailments during the War. Appliances of surgical treatment and health care was an urgent need in the country which gave a major fillip to existing domestic industries, and Baruipur emerged as the main supplier of surgical instruments in Eastern India. This continued until the capital of India shifted to Delhi from Kolkata. The surgical instrument business in the region was badly affected thereafter. As an effect of the Partition in 1947 the Hindu owners and workers of surgical instruments producing units in Sialkot migrated to Jalandhar in Punjab, and there emerged the second site for the production of surgical equipment.

The story of the Baruipur cluster dates back to 1937, when a few *karmakars* (blacksmith) like Pawan Karmakar, Gaur Karmakar and Nitai Karmakar adopted the business of manufacturing

surgical instruments at Baruipur. Expertise was passed on from one generation to the next. The units specialize in surgical instruments for orthopedics, ENT, laparoscopy and others. After Independence, Bidhan Chandra Roy, the then Chief Minister of West Bengal, tried to boost the production sites in and around Baruipur.³ A service centre was established in Piyali town near Baruipur in 1960 to cater to the needs of existing small enterprises. *karmakars* or *komars* represents the caste of traditional artisans in Hindu caste hierarchy. Entrepreneurs took help from this centre. However, the performance of the centre deteriorated gradually. Nevertheless, it helped to set up several units. There is a large concentration of surgical instrument producing units in the southern part of West Bengal mainly in the district of South 24 Parganas. About 500 small entrepreneurs are engaged in manufacturing a range of surgical equipment in areas of Baruipur, Bishnupur, Diamond Harbour and Sonarpur. About 10,000 skilled and semi-skilled workers are employed in the industry. Baruipur has the largest concentration of surgical manufacturing industries, with about 300 small and medium enterprises. The units are mostly concentrated in villages such as Kalyanpur, Purandarpur, Khodarbarazar, Dhopagachi, Bidal-Baikunthyapur and Tongtala areas. And, a few are located in Madhya Baruipur, Kanta Khal and Shasan in Baruipur Sub-Division. In Baruipur, 31 enterprises are Own Account Manufacturing Enterprises (OAME), 13 Non Directory Manufacturing Enterprises (NDME) and the rest are Directory Manufacturing Enterprises (DME). All units are monitored by Baruipur Surgical Instruments Manufacturers Association (Basima).⁴ In the 1980s, Paul Instruments, one of the larger units at Baruipur exported its first consignment of instruments to the US. From then onwards a small number of instruments are supplied to international clients either directly or through traders in countries like the USA, the UK, Bangladesh, Nepal and Bhutan by about 10 units that are relatively larger in size. Exporting units typically employ 50-55 individuals, while the majority of these units are small, employing one to four people. These units produce surgical scissors, forceps, needle-holders, knives, retractors, clamps and a variety of surgical instruments used in general surgery, eye surgery, Orthopedic, ENT, gynecological, urology, obstetrician, intestinal surgery, and for oral treatments. Some units of this industrial cluster also produce fishing equipment, which require similar types of skills. Manufacturing of surgical instruments in India depends overwhelmingly on manual skills and Baruipur possess a large pool of traditionally skilled workers.⁵

1.	Principle Products Manufactured in the Cluster	Surgical Instruments
2.	Name of the SPV	Baruipur Surgical Instrument Manufacturing Apex Association (BASIMAA)
3.	No. of functional units in the Clusters	200
4.	Turnover of the Clusters	Rs. 6,17,368
5.	Employment in Cluster	42
6.	Average Investment in Plant and Machinery	232.27 lakh

Source: Ministry of Micro, Medium and Small Enterprises, Government of India

Link: <https://msme.gov.in/performance-under-various-schemes-mo-msme>

Production process :

- **Raw materials:** Raw material is of utmost importance in the production of surgical instruments and forms the first fob of the value chain. The basic raw material used is stainless steel. Some other metallic alloys of chemicals, brass, copper, titanium, grinding and polishing chemicals and wheels and abrasives are also used but in very small proportion

as compared to stainless steel. Stainless steel can be broadly divided into two categories: one is magnetic steels and the other is non-magnetic steels. Two or three dealers in Baruipur supply the required steel to most of the units in the cluster. Some of the larger units buy steel from dealers in Netaji Subhas Road, Kolkata. However, there is no facility to test the quality of inputs anywhere in and around Baruipur. As a result, the number of complaints against rusts in instruments of Baruipur is growing. Tools required for the production of surgical instruments are stone wheel, file and drill and other inputs such as polishing sand, and chemicals are all procured from Thanthania market, Kolkata. The fuels used in these units are coal and electricity supplied by the State Electricity Board.

- **Die making:** In surgical instruments manufacturing die making is considered to be the critical stage. Different dies are required at various stages of production, such as blanking dies forging dies, cold stamping dies, etc. The basic raw material required for these dies is die steel, which is normally imported at very high costs. In Baruipur karmakars use Gola, local name given to rail track and also axle steel, obtained from used axles of heavy vehicles, steels from some other sources is also used in the process.⁶
- **Forging:** The job of forging is generally outsourced to the *karmakars* of Jhulpia village. Improved technology and associated tools like drop forgoing, broaching tools and milling machines are not in use in Baruipur. Forging is the process of shaping malleable metals by means of hammers and presses. During this process the blanks are heated and while red-hot, the blanks are placed in a die and struck with a hammer, as a result the blank acquire the shape of the die. The forging job is sometimes done in-house by the parent units, while in most of the cases it is outsourced. The forgers in Jhulpia make the primary shapes of instruments using steel supplied by the parent unit. In the forging units, a *roj* implies 10 hours of work, as because, it takes about one or one-and-half hours to fuel the fire before production begins.⁷
- **Annealing and trimming:** During the forging process the metal due to high temperature exposure and rapid cooling becomes hard and brittle. To relieve the stresses from the forged instrument, the instrument is annealed by maintaining the forgings at a known temperature to homogenize metastable condition and to soften the metal. In order to remove scale from the metal surface and debur the metal forgings from ‘flash’ on the sides of the instruments formed by Trimming during the forging process.
- **Heat treatment:** In order to perform good quality machining the surgical instruments are annealed. The process of annealing softens the instruments. To retain a peculiar shape, the instrument has to be hardened again.
- **Electropolishing:** Almost all the instruments after being heat-treated are electropolished using electropolishing equipment. In most of the units, operations such as polishing and grinding are done through electric operated machines. Some of them also use others’ machine on a rental basis.
- **Finishing:** Finishing of the surgical instruments is done by using a number of different finishing wheels, leather belts and brushes. In the first phase rough finish is done by leather grinding wheels. Grinding belts are used to perform finishing job on the inner sides of rings of instruments like forceps and scissors. Wire brush wheels are used for finishing knurled components of the instruments. Final finishing is done with the help of buffing and satin finish wheels.
- **Testing and cleaning:** Before the instruments are finally packed they are tested so as to

ensure the quality of instruments against corrosion etc. For this purpose first of all a boil test is performed in which the instruments are boiled in a metal water container and afterwards are checked for rusting and other deposits on the surface, if any. The other procedure performed at this stage is the ultrasonic Cleaning.

- **Labeling and packaging:** This is the final stage of the production process. The instruments are etched with the required labels and markings with the help of electronic etching machines and stencils. Each instrument is finally packed in separate poly bags.

Labour conditions :

In Baruipur, we find three types of labour: skilled worker or *mistri*, semiskilled worker or *Half-mistri*, and the unskilled worker or *Helper* or *Boy*. There is no female labour in the cluster, and this is precisely due to the Social stigma that women should not work in factories. In many units, child workers are recruited as apprentice or *Helper*, but their employment is never officially acknowledged. The hired workers are recruited directly by the owner. In some of the cases, a team with semi-skilled helpers, led by the skilled '*mistris*' is employed as a group, on contracted basis. Usually, there is work throughout the year and the length of the working day is 10 to 12 hours per day. Generally, eight hours of work is considered as a day's work (or *roj*). In the forging units, a *roj* implies 10 hours of work, as because, it takes about one or one-and-half hours to fuel the fire before production begins. In most of the cases, payment of wages is on time rate and in others, a combination of both piece and time rate is the usual practice.⁸

Workers recruited for the whole year are paid on time-rate. Those contracted in the primetime of the year are given wages on the basis of production per day. In most of the units wages are revised annually. Usually, the changes are in the tune of one or two rupees per day, and vary according to the performance and skills of individual workers. There is a trend of reshuffling of assignments after *Puja* (September-October). Units are closed on Sunday although workers are not given wages for this compulsory holiday. In the larger units, where there are provisions of leave with pay, the workers are offered this facility for only 12 to 13 scheduled holidays in a year. There are no medical benefits for the workers and none is registered under the Employees State Insurance (ESI) Scheme, in which, the Government shares the responsibility for the treatment of workers. A labour named Krishnagopal Karmakar of Chatterjee surgicals said, 'we get the festival allowance as bonus equivalent to 15 to 24 days' wage and is paid during *Puja* Festival or Eid-u-joha. Workers are paid overtime allowance for their work exceeding eight hours in 16 of the 26 units employing hired labour.'⁹ The helpers — the lowest grade of workers — have no definite limit of a day's labour and hence, no overtime claim. Their wages are a lump-sum amount for the month's work and some pocket money is paid in addition for refreshment during extra work. About 76 per cent of the workers are working in the same enterprise for five or less years.

By comparing the wages and incomes of the workers in surgical instrument manufacturing units, with those of unskilled labour in other occupations in West Bengal, covered under the Minimum Wages Act, 1948, we find that a semiskilled and unskilled labour in this cluster earns less than half or even one fourth of the minimum wages of unskilled labour in other occupations. Considering major industries like jute, engineering and cotton textile, a skilled labour in Baruipur earns almost the same as that of unskilled labour in these major industries. For instance, the minimum wage of a *bidi* worker in West Bengal is Rs. 63.52 (US\$ 1.38) per day for rolling 1000 *bidis*. Despite the low wage level of workers in Baruipur surgical units, the labour force prefer this occupation rather than working in agricultural fields due to many reasons. First, though the wage rate in agricultural sector

is equal or even a bit higher than that received by a semiskilled labour in surgical industry. Nevertheless, farm related jobs are not available throughout the year; hence, the annual earnings of workers in surgical units are higher than that of agricultural labours. Second, the physical hazard is more in agricultural fields, than that in working under a shed. Third, and most important too is the fact, that working as wage-labour in a surgical unit is often considered a transitory experience, even if necessary to acquire professional skills, a good personal 'reputation' and a small amount of Money capital, all of which are indispensable in endeavoring to become Self-employed.¹⁰

Table 2: Average wages per eight hours and monthly earnings of owners and worker		
Owner/Worker	Wages/day (in Rs.)	Earnings/month (in Rs.)
Owner (O)	n.a	2,850
Owner (N)	n.a	3,404
Owner (D)	n.a	5,985
Mistri (N)	59.27	1,368
Mistri (D)	65.60	1,979
Helper (N)	40.80	740
Helper (D)	49.95	1,223
Boy (N)	18.93	292.5
Boy (D)	25.60	562.5

Source: Roy Satyaki, 'Unorganized manufacturing, flexible labour and the low road: lessons from contemporary India', In D.Banerjee and M. Goldfield (Ed.), "Labour, globalization and the state, Routledge", USA, 2008, p.122. Notes: O= OAME; N= NDME; D= DME

Marketing of surgical instruments :

Due to the absence of established brand names within the industry and also inactive involvement of world-renowned brand names in Baruiipur, manufacturers have to use different marketing techniques to introduce themselves and their products globally. Surgical instruments produced in Baruiipur are available in many of the states in India and also being exported abroad. The small manufacturing enterprises have little direct access to those markets and thus dispose of their products to local dealers. The larger units usually have their own network, of buying and selling while they depend upon large dealers in case of marketing their products outside the state. The OAMES and NDMEs largely depend upon local buyers who happen to be the big manufacturers in Baruiipur. The products of the cluster are sold to surgical instrument dealers in Delhi, Chennai, and Nagpur, Raipur, Lucknow, Ahmedabad, Assam, Tripura, Hyderabad, Bombay, Bihar and Orissa. The products of Baruiipur are exported to Nepal, Bhutan and Bangladesh through big dealers, concentrated in and around Central Avenue, Kolkata. Paul's Instruments, a pioneer in Baruiipur cluster is the only concern registered with the Food and Drug Administration, United States of America and exports disposable appliances abroad.¹¹

The market of surgical instruments is a buyers' market and most of the small producers actually have no idea about the volume of demand and its composition. This gives opportunity to a handful of large traders and local big dealers, to accrue enormous profits by selling instruments in the final market six to seven times the procurement price. The larger units, who attend the professional conferences on health services and have regular interactions with doctors, do modify their products according to the changing demand pattern. Few decades ago traders from Delhi and Bombay used to visit Baruiipur and pay in advance for good quality surgical instruments. However, seldom this occurs now. Many of these traders now purchase surgical instruments from Jalandhar. Recently, a

few educated youth belonging to the middle class families in Baruipur, have emerged as agents of the value chain to sell products of the cluster outside West Bengal. However, they are not fully aware of the production processes or the skills required in the surgical instruments making. Further, they are not wholly dependent on this business and their families have alternative sources of income.

Table 3: Surgical products of Baruipur and their demands in domestic markets		
Products	Mostly Exported to	Demand in Markets
General Surgery Instruments	Kolkata, Delhi, Bihar, Orissa	Good
Orthopedic Instruments	Kolkata, Tripura, Gurgaon, Assam	Good
Anesthesia Instruments	Kolkata, Nagpur, Mumbai	Below Average
Dental Instruments	Kolkata, Mumbai, Bihar	Very Good
Gynecology and Obstetrics Instruments	Kolkata, Hyderabad,	Average
Cardio Thoracic Surgery Instruments	Kolkata, Delhi, Raipur	Very Good
Neuro and Spines Surgery Instruments	Kolkata, Assam	Average
Urology and Proctology Instruments	Kolkata, Delhi, Assam,	Poor

Source: Field Survey at Chatterjee Surgicals, Baruipur.

Surgical industry and products of Baruipur :

London based M/s. Allen and Berry was one of the major suppliers of surgical appliances in Eastern India. Most of the orders of instruments for government hospitals were floated in Kolkata being the capital city of the time. M/s. B. Paul and Company and M/s. H. Mukhejee and Company were the premier indigenous producers of surgical instruments in Bengal and also the principal selling agents of foreign enterprises (Government of West Bengal, 1948). These firms gradually entered into repairing jobs of hospital instruments using the expertise they developed through after sales service of foreign products. The traders needed local skills and Baruipur (situated about 20 miles away from Kolkata), which had a high concentration of traditional blacksmith or *karmakars* and local artisans became the supply base. Patitpaban Karmakar is known to be the first person in Baruipur to introduce an independent surgical instrument producing unit before Independence (1947). The traders played a significant role to train up these *Karmakars* and the industry began to emerge depending on these local artisans.

Some of the renowned surgical units in Baruipur are:

- **M.S. Kanji Surgical Pvt.Ltd.** Supren Kanji founded the company in 1980 near purandarapur, Baruipur. They are reputed manufacturer, supplier, exporter and importer of hospital equipments, hospital furniture's, surgical instruments and ophthalmic instruments (Titanium, Stainless steel, and Tungsten Carbide).
- **Chatterjee surgicals:** Established in the year 2003, Chatterjee Surgical is involved in manufacturing and supplying of superior range of medical and surgical instruments which include medical surgical scissors, ophthalmic surgical instruments, intestinal surgical instruments, ear, nose & throat surgery instruments, neuron surgical instruments, gynaecology instruments, plastic surgery instruments, etc.
- **Amina surgicals:** Amina Surgical established in the year of 1997 which is highly involved in manufacturing and supplying medical instruments like heart surgery instruments, neuro and spine surgical instruments, orthopaedic instruments etc.
- **Apexo surgicals:** Owned by proshanto das, apexo surgical established in 1999 near fultola, piyali town in Baruipur. Being smaller gives nimbleness to Apexo, which could render

a long term advantage in changes in product mix.

- **Plus Surgicals:** Plus Surgicals was established in 1989 as a Sole Proprietorship organization. The company, since inception, is acknowledged for its ability of manufacturing, exporting, trading, wholesaling and supplying a wide assortment of Stainless Steel Chopper, Automated Clamp, Surgical Scissor, Metallic Handle, Manipulating Hook, Metal Dissector, Tongue Depressor, Medical Retractor and many others.
- **Laskar Surgicals:** Established in 1996, Laskar Surgical, an eminent Manufacturer and Supplier of Surgical Instruments. They makes wide range of products such as Forceps, Surgical Forceps, Medical Surgical Forceps, Calipers Gauges, Surgical Scissors, Speculums, Saptulas, Gouges and Corneal Markers are manufactured using high-grade raw material.
- **Mondal Surgicals:** Mondal Surgicals began their in 1993 at madarhat area of Baruipur. Mondal surgicals showcases a vast product range, including wheel chairs, digital meters, surgical instruments, blood pressure monitors, glucose meter, water and air bed, nebulizer, adult diapers, water and air bed, under pad, orthopedic supports like sacra lumbar belt, abdominal belt, knee support, ankle binder and waist belt, digital thermometers, Littman stethoscopes, hot water bag, orthopedic heating pad, composition monitors, orthopedic heating pad, morning walker, pill boxes, yoga mats, gel pack, hot and cold gel packs, compression stockings, arm sleeves, sphygmomanometer, and more.
- **Ankur Metal Works:** Since 1985 ankur metal works manufacturing speculums, retractors, fixation rings, knives, blade breakers, dissectors etc.
- **Eye Glance Associates:** Established in the year 1998 they manufacturing, supplying and exporting a catalogue of variety surgical instruments such as Stainless Steel Forceps, Surgical Scissor and Surgical Instrument and many more.
- **Crossland International:** Crossland International is a manufacturer, exporter, supplier and wholesaler of products since 1995. They are involved in offering a wide range of Ophthalmic Instruments, Laparoscopic Instruments, Neurosurgical Equipments, Stainless Steel Forceps, Titanium Forceps and many more.

Besides them other renowned surgical instrument makers in Baruipur are: **Calber Surgicals, NCS Surgicals, Mihir Naskar, Netai Sarkar, Nivia Surgicals, Super Surgicals, Suriad Industries, T.A. Surgicals, U.K Surgicals, Promod Surgicals Pvt.Ltd.** etc etc.

Table 4 : Surgical products of Baruipur and their features with approx. prices			
Products	Specific Instrument	Features	Approx. Prices (in Rs.)
Orthopedic Instruments	Bone Nibblers/ Ronguers	Light Weight, High Strength, Rust Free	4,800
	Bone Holding Forceps/ Clamps	Perfect Grip, Strong, Well Finish.	3,000
	Bone Cutters	Fine Grip, Light Weight, Well Finish.	4,800
Anesthesia Instruments	Flow Meter Unit	Durable, Easy Use	650
	Forceps	Well Made	600
	Hister Mouth Opener	Long Lasting, Easy Use	1,000
	Valve With JFM	Well Finish, Long Lasting	1,650
	Tongue Depressor	Easy Use	120

Table 4 contd.....

Tale 4 contd....

Dental Instruments	Doyen Intestinal Clamp	Good Quality, Reliable	2,500
	Mouth Gag	Durable, Easy Use	4,500
	Hister Mouth Opener	Long Lasting, Easy Use	1,000
	Suction Tube	Well Finish, Long Lasting	1,000
Scissors	Dressing Scissors	Well Made	600
	Curved Edge Scissor	Well Made	3,000
	Straight Edge Scissor	Well Made	2,500
	Bandage Cutting Scissor	Well Made	600
	Scissor Episiotomy Barnes	Well Made	560
	Curticle Scissor	Well Made	150
	Oxygen Therapy Equipment	BPC Flow Meter Unit Metal	Safe, Well Finish
Oxygen Mox Regulator With Pressure Regulator Gauge		Fine Finish, Low Maintenance, Easy Installation	2,000
H.P Tube With PI Adapter		Optimum Finish, Safe	550
Oxygen Pressure Gauge		Well Made	450
Gynecology and Obstetrics		Cusco Speculum	Well Made
	Sims Duckbill Speculum	Curved .Smooth Ends.	600
Thoracic Surgical Instruments	n.a.	Good Quality, Reliable	6,000
General Surgical Instruments	n.a.	High Grade, Well Finish,Decent Standard	1,000
Gynecology Instruments	n.a	Bents and Straight Edges	4,000
Intestinal Surgical Instruments	n.a	Curved .Smooth Ends.	2,800
Urology Instruments	n.a	Fine Finish, Low Maintenance, Easy Installation	5,000
Plastic Surgery Instruments	n.a	High Quality, Well Finished.	3,000
ENT Surgical Instruments	n.a	Safe, Well Finish	5,000
Surgical Instruments With Fibreoptic Attachments	n.a	Durable, Easy Use, Well Finish.	6,000
Ophthalmic Surgical Instruments	n.a	Fine Finish, Low Maintenance, Easy Installation	800
Mosquito Artery Forcep	n.a	Well Made	400
Rochester Pean Artery Forceps	n.a	Optimum Finish, Safe	1,200

Source: Personal Interview with Sujit Chatterjee, CEO, Chatterjee Surgicals, Baruipur

Critical issues :

Since some decade surgical instrument makers from Baruipur are facing several challenges, including lack of advanced technology, government support and stiff competition from foreign markets are squeezing their margins.

– The entire cluster is unanimous in the opinion that the stainless steel that is currently available in Baruipur through dealers such as Mukund Steels, is sub standard and of inferior quality. The MSME units also believe that fake, local steel is often passed off as original make Mukund Steel, which causes rust and corrosion within months.

– The entire cluster suffers from the lack of forging facilities, which prevents them from

catering to large export facilities. Currently the maximum output comes from small, unorganized manual forges run by local blacksmiths, which is inadequate, unscientific and crude

- The Common Facility Centre (CFC) was touted to be an answer to the problem, but the procumbent of the wrong forging machine, understaffing and lack of cohesive vision on the part of the government has resulted in a complete failure of the money spent on the CFC.

- There is very little effort towards new product development of high technology or specialty surgery equipment, which could be an answer to the growing competition. All units manufacture simple, commonplace disposable which is a high volume - low price segment, which brings it into direct competition with Sialkot. If workers are to be believed, these units are facing stiff competition from Pakistan. “In Sialkot there is a similar cluster of surgical tools manufacturing unit. They are technologically advanced. They manufacture better tools than us. Pakistan has captured a major chunk of the international market”, said Kamal Das, secretary, Baruipur Surgical Instruments Manufacturers Association (Basima). He further adds “We are losing ground in the international market. Inadequate information or changing customer’s preference in the international market is another problem. Middlemen and traders enjoy most of the profit in the value change we are not aware about the market potentiality. Government on its part is apathetic towards our trade. It should have taken steps towards providing strong linkages between SME s and Institutions. The government should have worked towards creating a brand image for these units in Baruipur.”¹²

- All units suffer from lack of skilled manpower, which is a direct result of low wages and growth opportunities for the workers. Lack of training, segmentation and wage levels plus opportunities in other sectors for low skilled work has contributed in a glut of workers. All units suffer from lack of skilled manpower, which is a direct result of low wages and growth opportunities for the workers. Lack of training, segmentation and wage levels plus opportunities in other sectors for low skilled work has contributed in a glut of workers.¹³

- Electroplating, which is a mandatory procedure to prevent rust, is often performed by dipping the instruments in a cocktail of acids, with absolutely no scientific understanding. Whereas electroplating requires precise equipment, none of the MSME units audited had formal understanding or access to electroplating. The acid mixture is often crudely prepared, which causes the quality to completely fail within months of use.

- Only two of all the units audited had websites. With the complete absence of any sort of identity, location in the deep interiors and no efforts of self promotion has resulted in the entire cluster being completely unknown. Whilst the units believe that they are well known, it is only partially in pockets. There is no global recognition or acknowledgement of existence. This has led all units to be completely subservient to dealers in metros, who exploit the units and claim the margins of profitability.

Major Government initiatives :

After Independence, Bidhan Chandra Roy, the then Chief Minister of West Bengal, tried to boost the production sites in and around Baruipur. In 1956, The State Government of West Bengal, the Department of Industries had set up a service centre by the names ‘Surgical Instrument Service Station’ at Piyali Town in Baruipur.¹⁴ In 1990-2000, Department of M&SSE got diagnostic survey conducted by Central Mechanical Engineering Research Institute (CMERI), Durgapur and RDCIS, SAIL, Ranchi. “Both the organizations had stressed on the rejuvenation of the existing service station apart from making other recommendations with a view to giving impetus to the growth of Surgical Instrument Manufacturing units in Baruipur area. Therefore, Surgical Instruments Service

Station, Piyali Town has been rejuvenated and converted into the Common Facility Centre to fulfill the need of the natural cluster of surgical instruments manufacturing enterprises in and around Baruipur,” said an officer in Directorate of Micro, Small and Medium Enterprises, requesting anonymity.¹⁵

Surgical Instruments Service Station, Piyali Town, Baruipur, has been rejuvenated and converted into the Common Facility Centre under MSE-CDP to fulfill the need of the natural cluster of surgical instruments manufacturing enterprises in and around Baruipur, Sarsuna and Behala by providing modern technological service for sustenance in the present market and building their capacity. Nearly 600 enterprises are likely to be benefited through this project. State Government has provided the infrastructure support in addition to the cost sharing of Rs.115.24 lakhs (25% of the project cost of Rs.461.07 lakhs) against the share of Rs.345.83 lakhs (75%) of GoI. While State Government has released its full share, GoI has released Rs.245.35 lakhs as on date. MSME Tool Room is implementing the Project. A forging line including forging press, trimming press and heating furnace has been installed. A Laser Embossing Wing has also been set up that has started rendering service to the enterprises of the cluster. Special Purpose Vehicle (SPV) under the constitution of an association is formed [BASIMA] that will ultimately take over the CFC and operate it. The stakeholders and experts of MSME Tool Room, the implementing agency, are standardizing.

The system installed at site through trial run jointly.¹⁶

Conclusion :

From the second half of twentieth century Baruipur Surgical Cluster Industries has been flourished as one of the successful small-scale industrial sectors in the 24 Parganas District of West Bengal, India. Surgical treatment and health care was an urgent need in the country which gave a major flip to the existing domestic industries, and Baruipur emerged as the main supplier of surgical instruments in Eastern India. Manufacturing of surgical instruments in India depends overwhelmingly on manual skills and Baruipur possess a large pool of traditionally skilled workers. Thus Surgical equipment makers from Baruipur spread their wings, although a lack of advanced technology and tough competition in international market are squeezing the margins. Hundreds of craftsmen in Baruipur who handcraft surgical instruments are struggling to keep this ancient art alive. However Central and State government both are trying rejuvenation of the existing service and growth in productivity of Surgical Instrument Manufacturing units in Baruipur area. Therefore, Surgical Instruments Industries in Baruipur surely spell its own charm to the rest of the world in near future for sure.

REFERENCES

1. Kirkup John (2006). *The Evolution of Surgical Instruments*, History of Science, USA, p.2.
2. District Census Handbook, South Twenty Four Parganas, Directorate of Census Operations West Bengal, Series 20, Part XII-B, 2011.
3. Karmakar Kalicharan (1994). “*Baruipure Surgical Shilper Itihas*”, Mega Printers, Baruipur. p.13 [In Bengali]
4. Somaddar Sumon, Surgical Clusters in Baruipur, *Sanglap. J. Literary & Cultural Inquiry*, 4 (2) : 52-53.
5. Roy Satyaki (2013). “*Small and Medium Enterprises in India*”, Routledge, USA, 2013, p.55.

6. Basu, J., Sarkar, B. and Bhattacharyya, A. (2009). Cluster Approach in transfer of technology to rural SMEs in India: Baruipur Surgical Instruments Cluster, a test case (West Bengal). *J. Rural Development*, **28** (4) : 122-124.
7. Biswas, I. and Bandyopadhyay, D. (2014). Sustainability of Clusters: A Case Study of Baruipur Surgicals, *ASCI J. Management*, **44** (1) : 177-178.
8. Roy Satyaki (2008). 'Unorganized manufacturing, flexible labour and the low road: lessons from contemporary India', In D.Bannerjee and M. Goldfield (Ed.), "*Labour, globalization and the state*", Routledge", USA, pp.126-128.
9. Karmakar, Krishnagopal (2017). Personal Interview, Chatterjee Surgicals, Baruipur, 7 September, 2017.
10. Ghosh, T., Das, B. and Gangopadhyay, S. (2011). A study on factors of dissatisfaction and stress of the blacksmiths resulting from the organizational culture in the surgical instrument industry of India. *Industrial Psychiatry J.*, **20** (2) : 231-32.
11. Talukdar, Sanjay (2005). *Cottage and Small Scaled Industries in West Bengal*. New Heritage Printers, Kolkata, pp.68-69
12. Das, Kamal (2017). Personal interview, Secretary of Baruipur Surgical Instruments Manufacturers Association (Basima), Baruipur, 18 September, 2017.
13. Ghosal, G., Gangopadhyay, S., Ghosh, T. and Das, T. (2011). Impact of injuries on work performance among the surgical blacksmiths of West Bengal, *Indian J. Occupational & Environ. Med.*, **15** (3) : 92-96.
14. Mondal, Sourav (2012). Dakkhin Banger Khudro O Kuthir Shilpa. C.F. Publishers & Co., Kolkata, p.97-98 [In Bengali]
15. Bhaskar, M.R. Bhatt (2012). 'Assessment Survey of Baruipur Surgical Instruments Cluster', MSME Designclinic Scheme, Government of India & National Institute of Design, 2011-12. pp.42-44.
16. Annual Report (2016-17). West Bengal, Ministry of Micro Small & Medium Enterprise (MSME), Government of India, 2017.

BIBLIOGRAPHY :

Primary Sources :

1. Annual Report 2016-17: West Bengal, Ministry of Micro Small & Medium Enterprise (MSME), Government of India, 2017
2. Bhaskar MR Bhatt, Assessment Survey of Baruipur Surgical Instruments Cluster, MSME Design Clinic Scheme, Government of India & National Institute of Design, 2011-12.
3. Brief Industrial Profile of South Twenty Four Parganas District, West Bengal, Ministry of Micro Small & Medium Enterprise (MSME), Government of India. 2015.
4. District Census Handbook, South Twenty Four Parganas, Directorate of Census Operations West Bengal, 2011, Series 20, Part XII-B.

Secondary Sources

English Books and Journals

1. Bannerjee, D. and Goldfield M. (Ed.) (2008). "*Labour, Globalization and the State*", Routledge, USA.
2. Basu, J., Sarkar, B. and Bhattacharyya, A., Cluster Approach in transfer of technology to rural SMEs in India: Baruipur Surgical Instruments Cluster, a test case (West Bengal), *J. Rural Development*, **28** (4) 2009.

3. Biswas, I. and Bandyopadhyay, D. (2014). Sustainability of Clusters: A Case Study of Baruipur Surgicals, *ASCI Journal of Management*, **44** (1) 2014.
4. Ghosal, G., Gangopadhyay, S., Ghosh, T. and Das T., 'Impact of injuries on work performance among the surgical blacksmiths of West Bengal', *Indian Journal of Occupational and Environmental Medicine*, Volume 15, Issue 3, 2011.
5. Ghosh T., Das B., Gangopadhyay S., A study on factors of dissatisfaction and stress of the blacksmiths resulting from the organizational culture in the surgical instrument industry of India, *Industrial Psychiatry Journal*, Volume 20, Issue 2, 2011.
6. Kirkup John, "*The Evolution of Surgical Instruments*", History of Science, USA, 2006.
7. Roy Satyaki, "*Small and Medium Enterprises in India*", Routledge, USA, 2013.
8. Somaddar Sumon, Surgical Clusters in Baruipur, *Sanglap: Journal of Literary and Cultural Inquiry*, Volume 4, Issue 2, 2013. pp.52-53
9. Talukdar Sanjay, "*Cottage and Small Scaled Industries in West Bengal*", New Heritage Printers, Kolkata, 2005.

Bengali Books and Journals:

1. Karmakar Kalicharan, "*Baruipure Surgical Shilper Itihas*", Mega Printers, Baruipur, 1994.
2. Mondal Sourav, "*Paschimbanger Khudro O Kuthir Shilpo*" C.F Publishers & co, Kolkata, 2012.
3. Naskar Bipasa, "*Dokkhin Banger Projukti O Karigari Shilpo*", Navadoy Patrika, Jaynagar, 2004.

Personal Interviews:

1. Sri Kamal Das, Secretary, Baruipur Surgical Instruments Manufacturers Association (Basima), Baruipur, Age: 46.
2. Sri Krishnagopal Karmakar, Labour, Chatterjee Surgicals, Baruipur, Age: 32.
3. Sri Sujit Chatterjee, CEO, Chatterjee Surgicals, Baruipur, Age: 54.
